

THE MINING CONGRESS JOURNAL

VOLUME 8

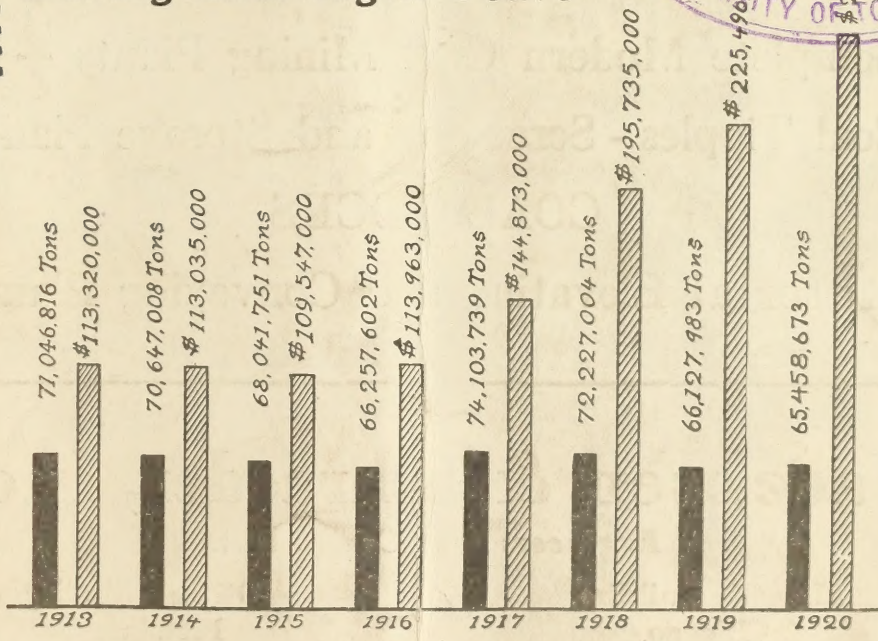
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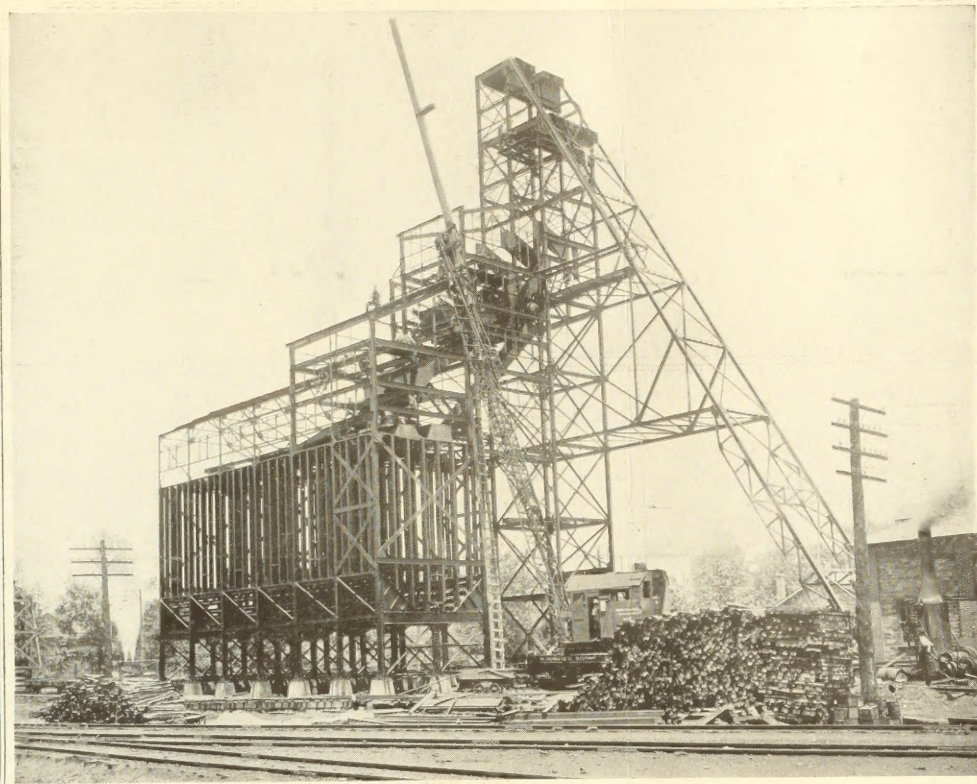
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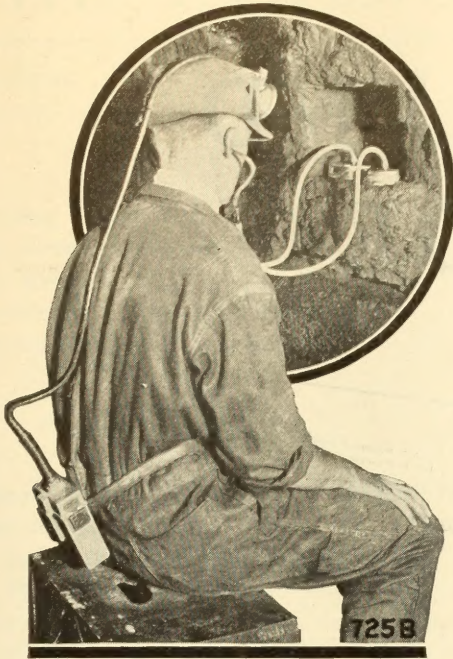
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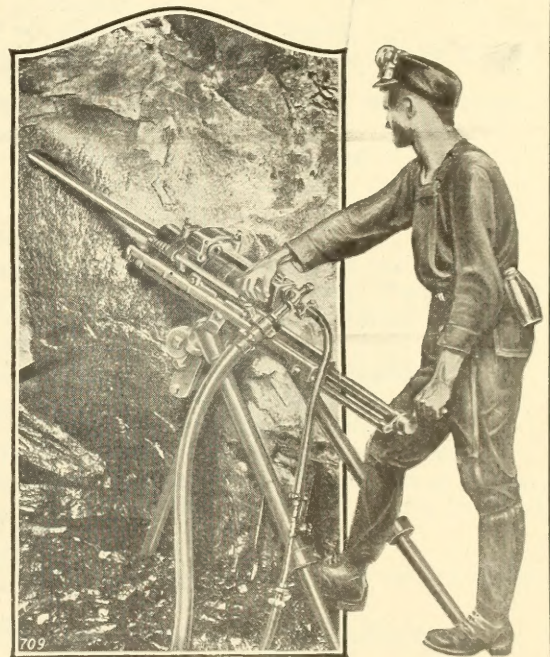


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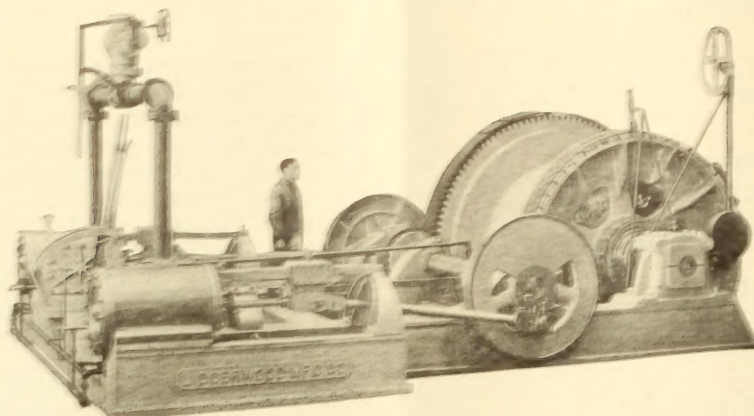
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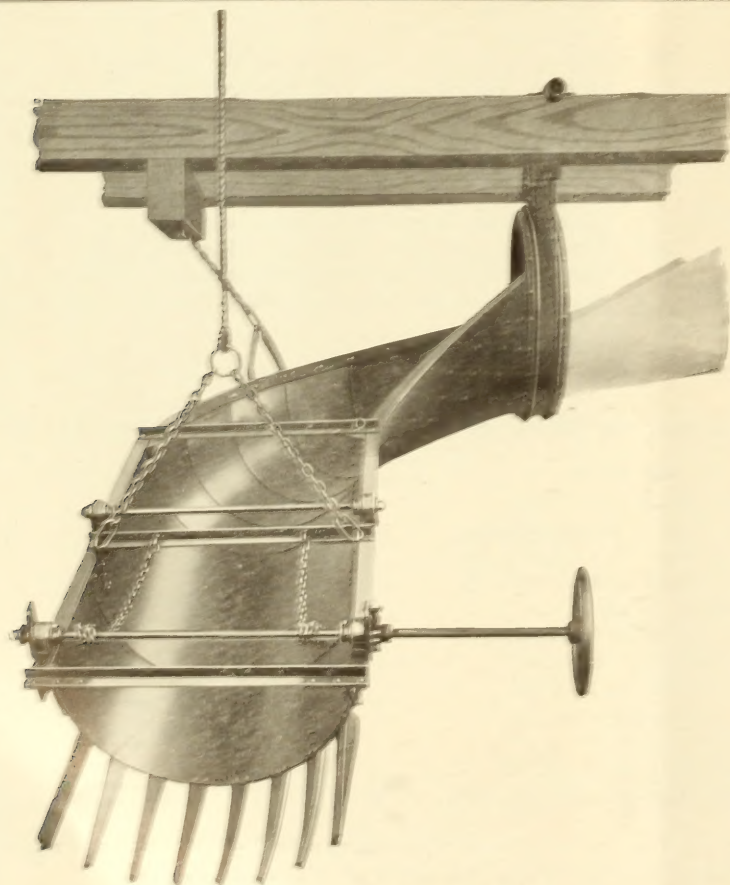
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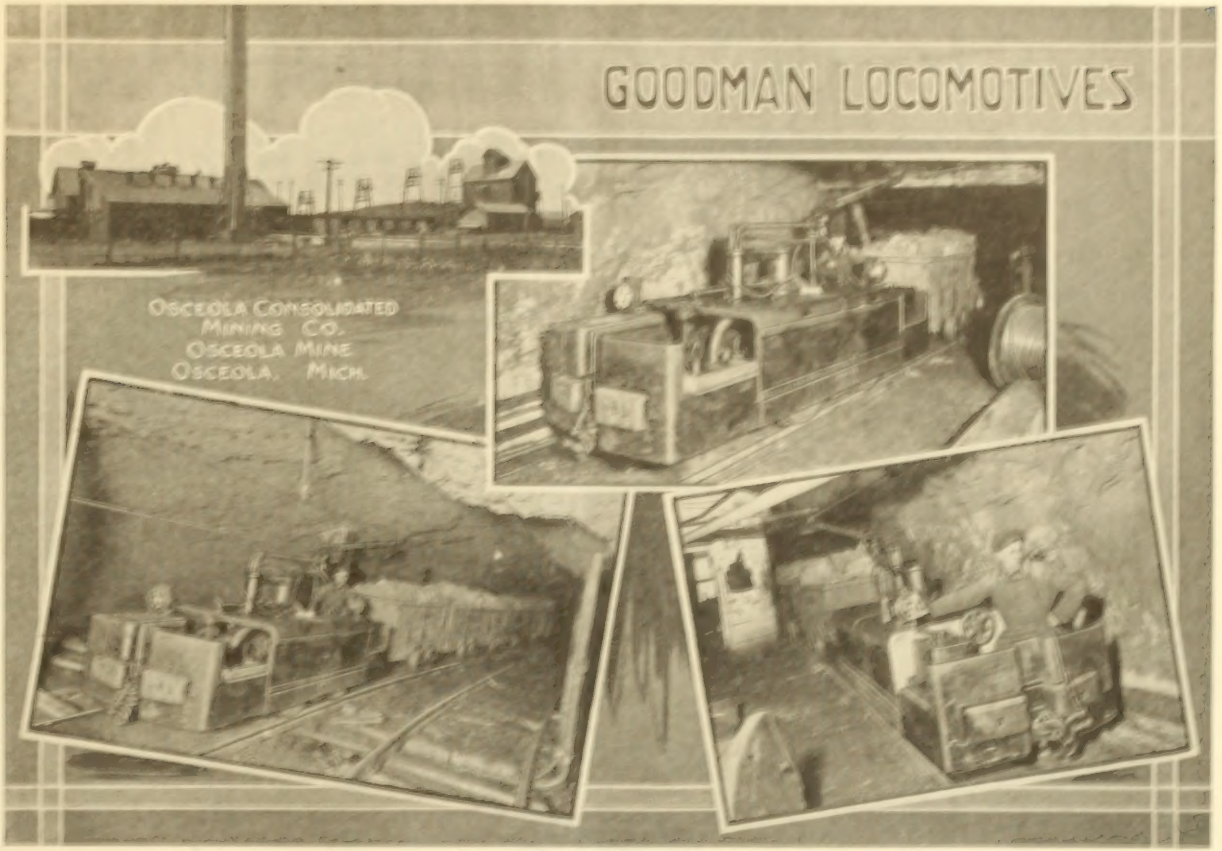
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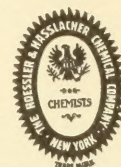
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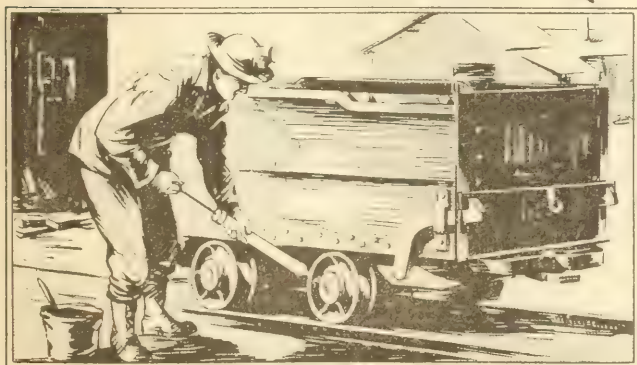
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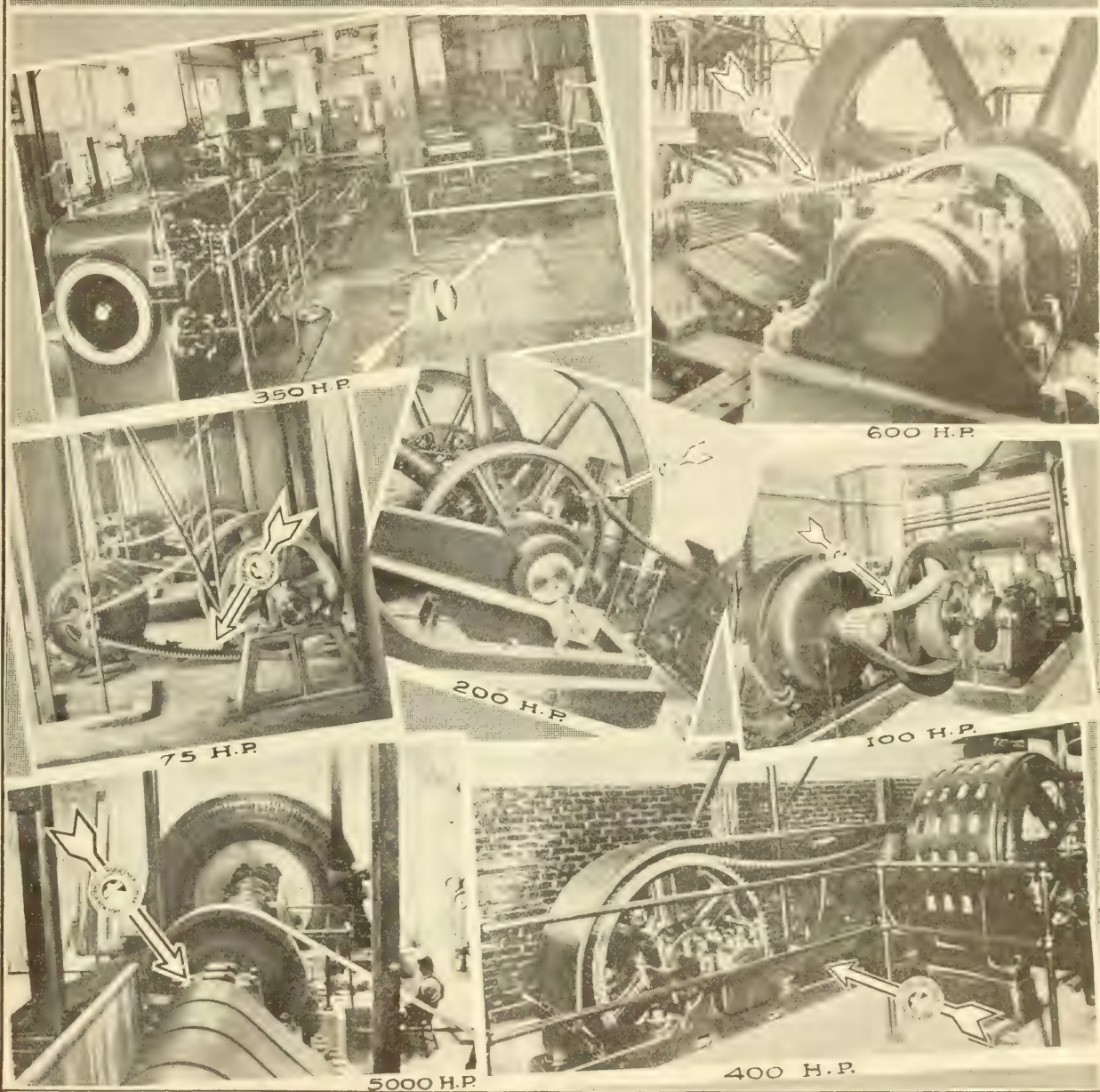
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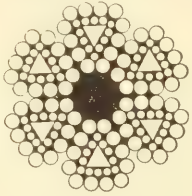
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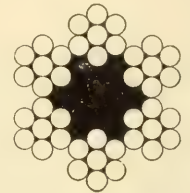
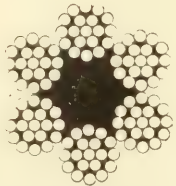
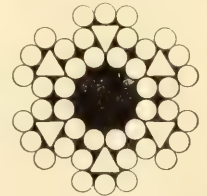
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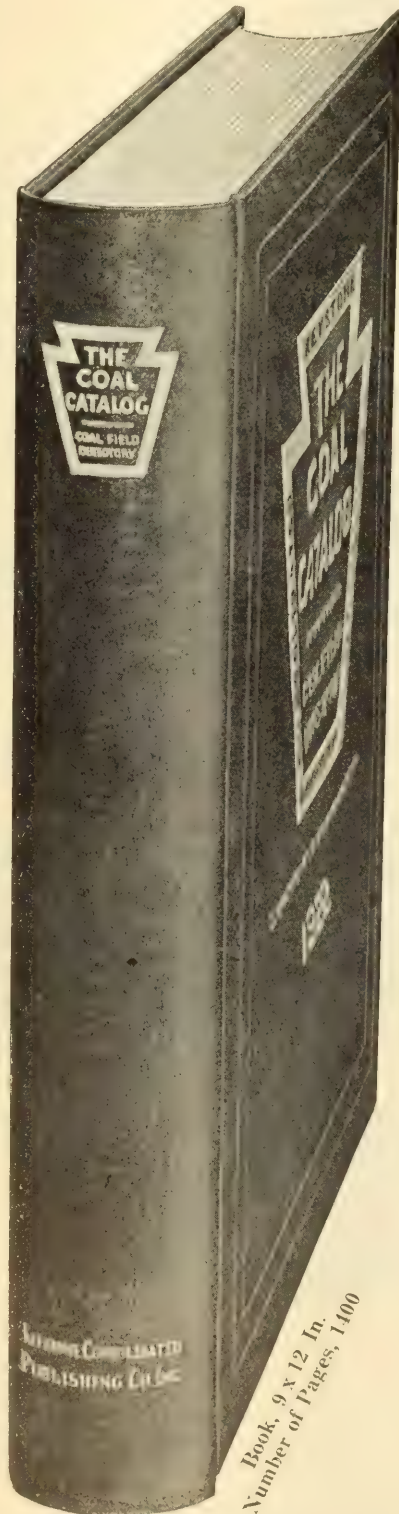
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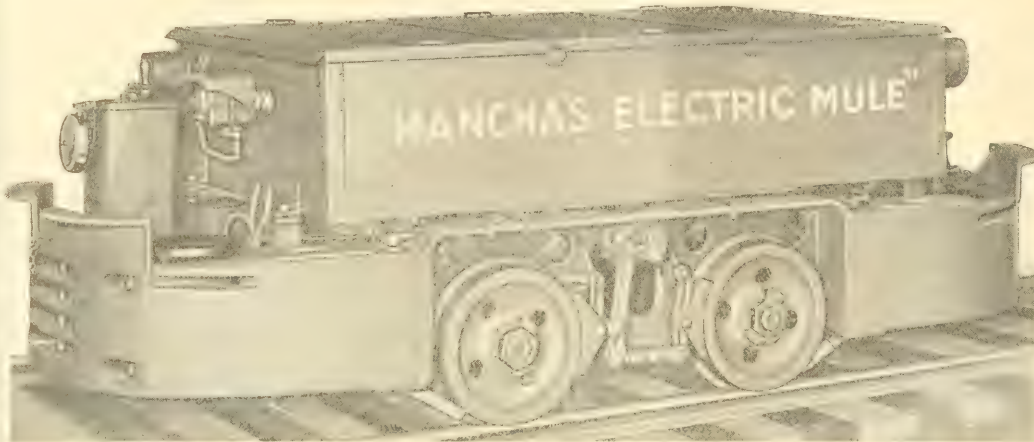
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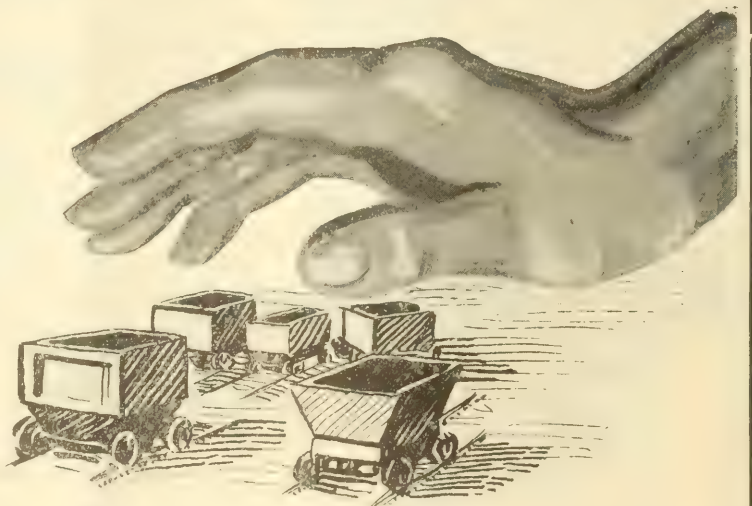
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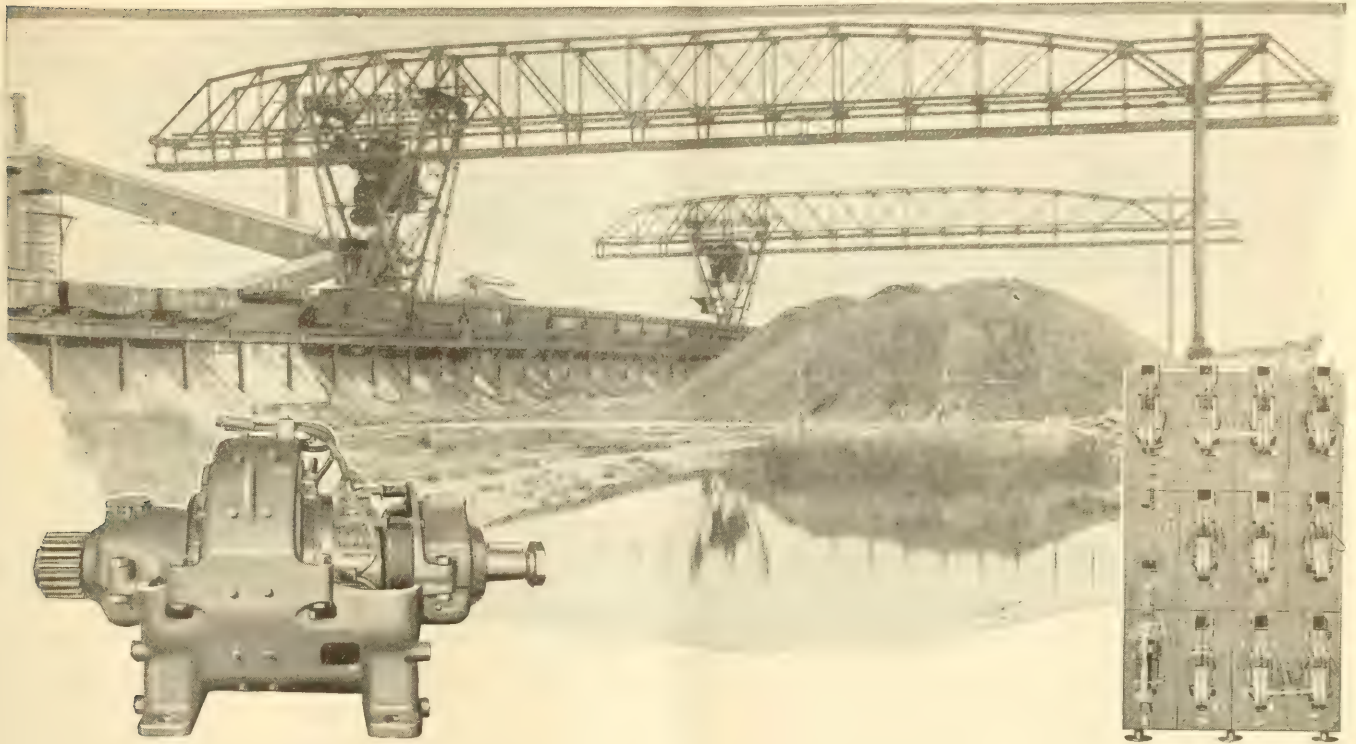
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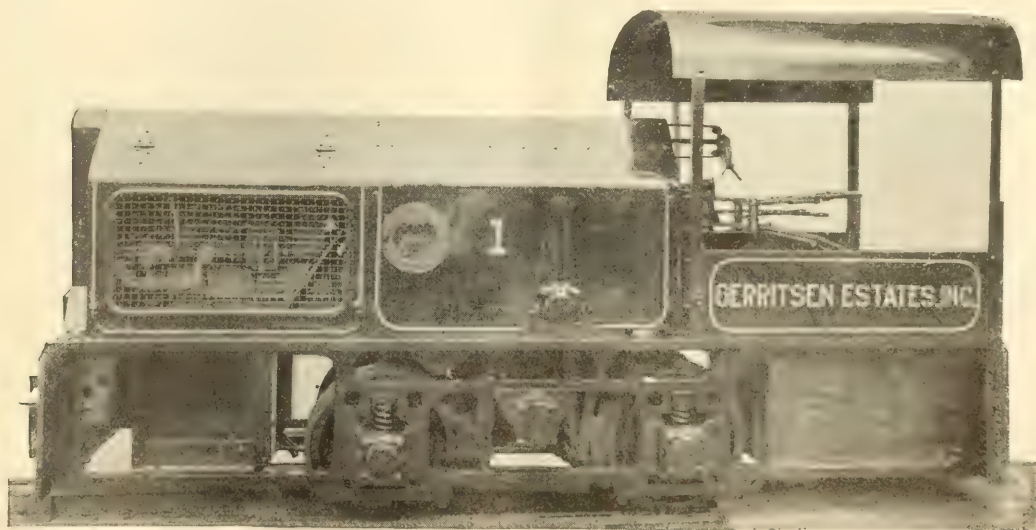
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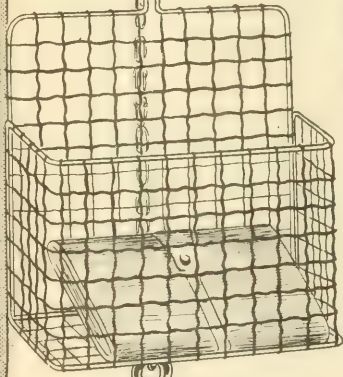
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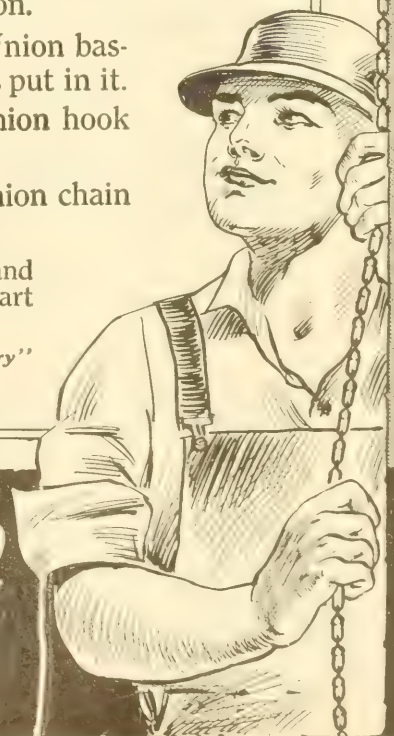
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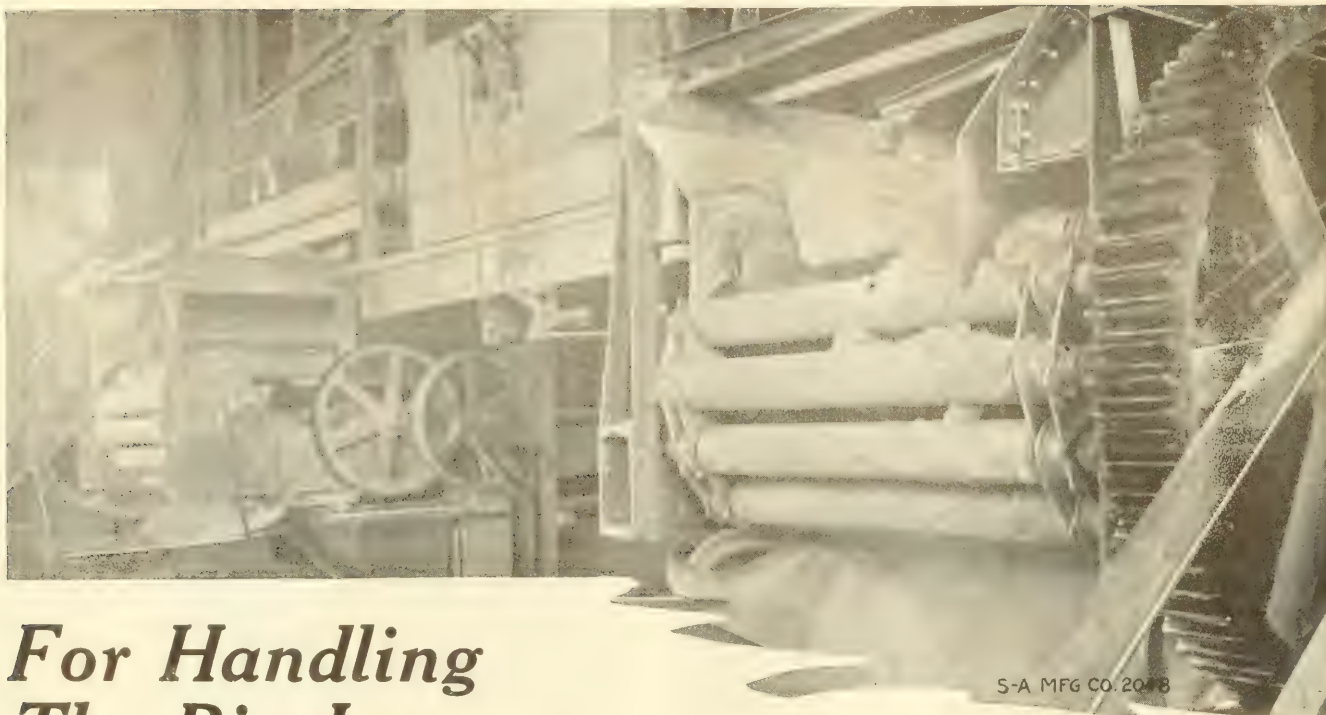
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JANUARY, 1922

NUMBER 1

CONGRESS RECOGNIZES CONDITION OF GOLD INDUSTRY

RECOGNIZING the depressed condition of the gold mining industry due to the fact that production costs have increased enormously while the price of gold remains fixed by statute, Congress in the revenue act of 1921 retroactively exempted corporations engaged in the mining of gold from the excess profits tax of 1917 on income from gold. These companies, therefore, whose returns for 1917 showed liability for excess profits taxes, are now entitled to claim refund of such taxes paid and to abatement of such taxes assessed but remaining unpaid.

The exemption provided in the 1918 law was made applicable to 1918 and subsequent years, but through an oversight was not made retroactive to include 1917. The amendment first proposed in the Senate would have made the exemption retroactive only in cases where the 1917 profits taxes have been assessed but remain unpaid and would have given relief to three companies only. This was obviously unfair to companies who have paid, and the American Mining Congress, together with others, strongly urged that the exemption should not be so limited, but should be granted to all.

Congress is thoroughly familiar with the gold situation as a result of the facts adduced during the hearings on the McFadden Bill. Had not the McFadden Bill campaign fully educated members of Congress and the public generally concerning the deplorable condition of the gold mining industry, it is certain that the exemption would not have been incorporated in the tax bill. As evidence of this fact, at any time after the conference report on this amendment reached the floor of either the Senate or House of Representatives it could have been thrown out on a point of order. No voice was raised in opposition.

LABOR AND LAW

WHEN THE PRESIDENT of the United States and the Chief Justice of the Supreme Court announce concurrently that labor unions must be held to strict accountability under the law, a long step toward genuine democracy has been taken. It begins to look as if the Adamson Law, after so long a time, would be construed as a horrible example, rather than a precedent, and that the man who works will hereafter be rated as a worthier citizen than the man who refuses to work.

In handing down the decision in the case of the American Steel Foundries vs. the Tri-City Central Trades Council, in which the abuse of "picketing" during strikes was involved, Chief Justice Taft said:

"How far may men go in persuasion and communication and still not violate the right of those whom they would influence? In going to and from work, men have a right to as free a passage without obstruction as the streets afford, consistent with the right of others to enjoy the same privilege. We are a social people and the accosting of one another in an inoffensive way and an offer by one to communicate and discuss information with a view to influencing the other's action are not regarded as aggression or a violation of that other's rights. If, however, the offer is declined, as it may rightfully be, then persistence, importunity, following and dogging become unjustifiable annoyance and obstruction which is likely soon to savor of intimidation. From all of this the person sought to be influenced has a right to be free and his employer has a right to have him free.

"The nearer this importunate intercepting of employes or would-be employes is to the place of business, the greater the obstruction and interference with the business and specially with the property right of access of the employer.

* * * * *

"A restraining order against picketing will advise earnest advocates of labor's cause that the law does not look with favor on an enforced discussion of the merits of the issue between individuals who wish to work, and groups of those who do not, under conditions which subject the individuals who wish to work to a severe test of their nerve and physical strength and courage."

In his message to Congress, President Harding said:

"As we have great bodies of law carefully regulating the organization and operation of industrial and financial corporations, as we have treaties and compacts among nations which look to the settlement of differences without the necessity of conflict in arms, so we might well have plans of conference, of common counsel, of mediation, arbitration and judicial determination in controversies between labor and capital. * * * It might be well to frankly set forth the superior interest of the community as a whole to either the labor group or the capital group."

Chief Justice Taft made it very explicit that both the loyal employe and the strike-breaker are reputable citizens whom the law will protect from violence and insults by strikers. He even went so far as to say that the man who owns the business has some rights which must be respected, a principle from which violent agitators certainly dissent in practice, if not in principle. President Harding asked that there be incorporated into the law of the land the still greater truth that the rights of the community are superior to those of either the loyal workmen, the strikers or the strike-breakers.

Despite soap-box claims to the contrary, more capitalists have been sent to the penitentiaries than labor agitators. The schemer who used the mails to defraud a few people out of a day's wage apiece has always been promptly dealt with while the agitator who by intimid-

idation deprived scores or hundreds of steady employment has gone scot-free. No business man could stand in front of his competitors' establishment and drive trade away for five minutes without being arrested, but labor agitators have always done this identical thing with impunity. There never was any valid reason why strikers or other members of labor unions should not be regulated in their actions by the same laws and exactly to the same degree as any and all other people. Judge Taft's decision indicates that they will be so regulated in the future, and President Harding's recommendation lends encouragement to the hope that the principle that no person or group of persons can claim as a right any privilege which conflicts with the rights of all the people will soon become law even as applied to industrial disputes.

THE NEXT CONVENTION AND EXPOSITION

THE TWENTY-FIFTH Annual Convention and Exposition of Mines and Mine Equipment of the American Mining Congress will in all probability be held in the new municipal exposition and convention hall in Cleveland, Ohio, October 9 to 14, 1922.

Tentative arrangements have already been completed through the Convention Board of the Cleveland Chamber of Commerce with the city authorities of Cleveland for the use of this splendid building in Cleveland which furnishes an ideal setting for this great industrial convention and exposition, and it is expected that these arrangements will be confirmed by the incoming administration.

The 1922 meeting of the American Mining Congress is especially significant, for it will be the anniversary convention marking a quarter of a century of steady growth and will therefore celebrate both the achievements of the past and point the way to greater growth and increased success in the future. As a special anniversary meeting, celebrating the immense and remarkable development of the mining industry as represented in the growth of the national organization of mining, this convention will bring together representative mining men from every State in the Union and it will be the largest and most significant industrial meeting ever held under the auspices of the organization.

The American Mining Congress functions as the national chamber of the mining industry and its remarkable growth is an indication of effective effort and wise leadership. With a membership distributed through forty-two states representing all branches of mining, the American Mining Congress affords a medium whereby the collective effort and combined power of the entire mining industry can be effectively utilized in safeguarding mining interests and in assisting in the further development of mining throughout the United States.

A special feature of this meeting in Cleveland will be the exposition of mines and mine equipment which will be staged in this new municipal building. A few months ago, at Chicago, in the face of depressed business conditions, there was assembled at the Coliseum the largest and most comprehensive exhibit of mines and mine equipment ever held in the United States. At Cleveland, where there is a much larger area and far more adequate facilities, it is believed that the extent of this exposition will be almost doubled and in addition there will be a group of extremely interesting governmental exhibits from South and Central America which will add much to the interest in this exposition.

In the opinion of many competent exposition men, the new building in Cleveland is the finest and most modern exposition building in America. Two floors are available for the setting of the exhibits, a machinery hall two hundred and forty-seven by one hundred and twenty-one

feet, and the arena floor, two hundred and thirty-five by one hundred and twenty-one. The architects in designing the building have kept carefully in mind the needs and requirements of the exhibitors. Service stations have been arranged whereby practically every booth can be supplied with a direct contact with connections for gas, hot and cold water, compressed air, steam and three types of electrical power. The charges for these different items are furnished on a cost basis and will be much lower than in most exposition buildings. Similarly, the architects in designing the building have arranged for ramps of low grade leading directly to the exposition and arena floors in such a way as to greatly lessen the cost of cartage and the installation of the booths.

Cleveland is itself a strategic center for the mining industry. In fact, the city has been largely built up as a result of mine activities. It is not only a distributing center for iron ore from the Lake Superior district but is the headquarters of extensive coal and oil operations. The cordial support of Cleveland mining interests in the development of this great meeting is assured and practically all of the manufacturing concerns which were exhibitors at Chicago have already expressed their desire to participate in the exposition at Cleveland.

The Twenty-fifth Annual Convention and Exposition of the American Mining Congress will be the largest and most comprehensive industrial exposition and convention ever held in the United States. It will be truly representative of America's greatest collective industry, mining—an industry which has been the foundation of the development of our entire industrial structure and which, with agriculture, represents the basis for American prosperity. The attention of the entire mining industry should be centered upon Cleveland at this annual meeting, for cooperative effort along all lines is the essential factor in the bringing about of greater production, greater development and greater prosperity.

THE MINING CENTER OF POPULATION

FROM TIME TO TIME the MINING CONGRESS JOURNAL has pointed out that mining was not a sectional business, that its scope was nation-wide and that its ups and downs paralleled the periods of prosperity and depression experienced by the whole country. Only in our last preceding issue it was shown that the production of metals, coal and petroleum was widely distributed over the North, the South, the East and the West, and that the interests of operators everywhere were mutual, while the prosperity of all other businesses was inextricably linked with that of mining. A recent study of the Bureau of Mines serves to make more emphatic our position in this respect.

According to the Bureau of Mines, the "center of population" of the entire mining and quarrying industry of the United States is in Illinois, about ten miles south of Springfield, the capital of the state. This point may rightly be considered the center of the world's mining population, because the American mining business is many times greater than that of any other country.

What may prove surprising to some who have not made a careful study, as has the Bureau's experts, is that the center of the metal mining industry is in Nebraska, at a point about twenty miles west of York and twenty-five miles northeast of Hastings. The first thought of one suddenly asked to name the place closest to the majority of all workers in the metal mines would be of Colorado, Arizona, Montana or some other western state. Very few would think of such an eastern location as Nebraska. But the center of population of metal mining

is the geographical point which can be reached with the minimum number of miles of travel by all the people engaged in the industry. This point is drawn away from the West and toward the north and east by the large numbers of men employed in the iron mines of Michigan, Minnesota, New York and Alabama, the lead and zinc mines in the Mississippi Valley states, the copper mines of Michigan and Tennessee and the multitude of miscellaneous mineral mines in the Appalachian Mountains.

The center of the coal mining industry is in Ohio, about thirty miles northeast of Chillicothe and fifteen miles southeast of Lancaster. The center of the stone quarrying industry is in Indiana, forty-seven miles northeast of Indianapolis, fifteen miles west of Muncies and thirty miles southeast of Kokomo.

But the center of population for all mining, including every coal mine, every metal mine and every quarry in the United States, is near Springfield, Illinois. If a straight line is drawn in any direction with this point as its center, all the miners on either side of the line would have to travel the same aggregate number of miles as those on the other side to reach the central point. It is worthy of note that this point is practically midway between the center of population of the United States and the geographical center of the country. Nothing like this distinction can be claimed by either agriculture, manufacturing or commerce. Mining, therefore, is the real hub around which America revolves.

CHANCE TO CO-OPERATE

STATISTICS have their value, but this value is measured by timeliness as well as accuracy. Tables and mathematical comparisons lose much of their worth when issued too late to be considered as other than historical documents. Among the most useful statistics issued by the government are those prepared by the Bureau of Mines, and while they generally are timely it is gratifying to note that each year sees a shortening of the time between the end of the period involved and the date of issuance of final reports.

Accident and fatality records for the metal mines and metallurgical plants for the year 1920 were issued by the Bureau of Mines last month. But this was a gain in time, because the same report for the year 1919 was not issued until January, 1921. The accident record for quarries during 1919 was sent to the Government printing office in November, 1920, but that for 1920 was sent in October, 1921—still another saving in time.

Questionnaires for metal mines and metallurgical plants for coke ovens and for the quarry industry for 1921 were mailed to operators by the Bureau of Mines on the last day of December. Most of the operators will fill them out promptly, but a few will procrastinate and wait for the second, third and perhaps the fourth request. Meanwhile, the issuance of the final statistics will be delayed, for the figures cannot be tabulated and percentages cannot be calculated until the last report is in. The Bureau can send its reports to the printing office within sixty days after its material is in hand. Publication of 1921 statistics by May or June will give ample time for comparison and for planning improvements in mine safety methods even during the current year. They will be compiled and published then if the operators send in their reports as soon as they receive the questionnaires which have already been mailed. Here is an excellent opportunity for co-operation.

SIMPLIFICATION OF TAX PROCEDURE

DECIDEDLY ENCOURAGING are the steps which are being taken by the Bureau of Internal Revenue toward the simplification of tax procedure. The Bureau is making an effort to adjust without delay all claims now pending, and has already eliminated one of the primary causes for past delays—red tape in cases involving abatement of overassessments and refund of overpayments. In a Treasury decision just published, the Bureau notifies taxpayers that they no longer will be advised of their privilege of filing a claim for refund of taxes which have been paid in excess of amounts legally due, but instead will receive a certificate of overassessment and a check in correction of the error, or if an assessment is outstanding against the taxpayer for income or excess profits taxes, the overpayment will be applied as a credit against the assessment, and the balance immediately refunded. This is a radical departure from former procedure. Heretofore when an overassessment or overpayment was disclosed by the audit of an income tax return, the taxpayer was compelled to file a claim, which was filed away until reached in due course, and indefinite and irritating delays in adjustment necessarily resulted. Taxpayers may continue to file claims for abatement and refund, but the new procedure will be distinctly advantageous to both the taxpayer and the Government.

The Tax Simplifications Board, created under the Revenue Act of 1921, is already functioning, and, by welcoming suggestions and recommendations from taxpayers through their respective organizations is proceeding on a broad and helpful basis. It is not the policy of the Board to make radical changes which might have a tendency to confuse taxpayers who have become familiar with the old forms and methods of procedure in the preparation of their returns for the taxable year 1921. It is true that the members of the board are all of them highly trained technicians, and something which to them might be as simple as twice two is four might be a nightmare to the average taxpayer; but since the taxpayers themselves are to be consulted before any change is agreed upon, the possibility for further complexities is considerably lessened and the chances for simplification are greatly improved.

BRITISH INVASION OF AMERICAN COAL MARKETS

RECENT IMPORTATIONS of British coal to Boston and New York at prices below those charged for similar domestic grades have become the basis of concern on the part of the Commerce Department, and have inspired the Interstate Commerce Commission to take up the possibility of reductions in freight rates on coal bound for seaboard points.

The British coal was actually sold at Boston for \$5.25 a ton, while Pocahontas coal of similar grade demanded \$5.60. British producers have been underbidding Americans in the West Indies with disturbing frequency.

Although some officials view the British importations at exceedingly low prices merely as efforts on the part of the British producers to build up business by carrying the commercial battle at a loss "into the enemy's country," there is a wide-spread opinion that this country's coal trade is in danger of losing a market which it has held for 20 years, that of bunkering vessels leaving our ports to cross the Atlantic.

If the British are actually making even a small margin of profit on their exportations to this country, American producers must negotiate through some means a reduction of costs of their coal laid down at the tidewater points.

Commenting on the situation, Secretary of Commerce Hoover has expressed the opinion that either production costs must be reduced or the rail rates cut sufficiently to meet the difference represented between prices of British importations and those of domestic coal. It is apparent that Mr. Hoover's mind has turned to rate reductions as the only recourse immediately available, and the probability is that his department has already urged before the Interstate Commerce Commission this view of the situation.

It is being pointed out that the British producers have achieved more success in liquidations back to 1913 levels than have members of the coal trade in this country, and consequently are closer to the point where they can enter into stiff competition with a firm foothold. An advantage in their favor is the tendency of British vessels to replace sand-ballast with coal on their "light" voyages to the United States, ability to sell the coal upon arrival and comparative ease of discharge being factors responsible for this system.

Freight rates offer themselves as the first target at which action to reduce domestic coal prices at tidewater is to be aimed, mainly because of the fact that the present tariffs are approximately 100 percent higher than those of pre-war days, and also because there can be no reduction in labor costs before March 31.

The entire situation is summed up in the expression of opinion by high authorities, closely in touch with the situation, that the export coal trade of the United States has found its anxiety to hold its place in foreign markets supplemented by the new invasion of the bunkering trade at home, which, while not of magnitude at present, may become a real problem if American production costs make it continually impossible for American dealers to meet British price quotations.

CREDIT THE MINES

WHILE this is being written, the United States Navy Dirigible, C-7, is circumnavigating Washington Monument, pirouetting over the White House and flirting with the clouds above the Capitol. It is filled with helium gas, an element which because of its non-inflammability is expected to make possible the saving of many lives during war and in the peace-time pursuit of commercial aerial transportation. It is one of civilization's latest developments and apparently one of the best, and it is a one-hundred percent product of the mineral industry.

Savages cultivate the fields. The lower animals have their highly developed transportation systems and maintain storage plants for the preservation of foods. Apes use wooden implements, ants run dairies and the birds are still the greatest architects and builders. Many other things may be done by instinct alone, but it takes brains to operate a mine. Mankind ceased to be brutish and began to be civilized when some creature more intelligent than the others fashioned the first implement out of stone. It was probably a woman, actuated by mother-love and stern necessity to make a vessel to boil some bitter brew to cure young Ichthyronimo Hippopolitibo's tummy ache. From that time on civilization and mining developed contemporaneously, hand in hand, each dependent upon the other, and today humanity from the cradle to the grave places its chief reliance upon the products of the mines.

The first substances appropriated to the use of the new-born babe are mineral substances—boracic acid, dropped in weak solution in the eyes to prevent blindness, and vaseline, applied to every other part of the body to soothe the tender skin and hasten its development.

Everything modern man eats, wears, plays with and buys or sells is composed of, or manufactured by the aid of, the products of the mines, including the instrument with which he writes his last will and testament. He gives up the ghost on an iron bed, is placed in a casket held together by steel and laid in his last resting place, which his friends smooth over with a metal shovel. Or, if he is cremated, the antimony out of which the "silver" handles on his casket are made becomes volatilized and wends its gaseous way along with his soul to that ultimate destination of all miners, whose streets are paved with gold. Neither this world nor the next could be run in orthodox fashion without the mines.

As it has been from the Stone Age, so it is today. The world came to Washington to talk about the limitation of armaments. Everything said had been said before, everything done had been done before, everything the delegates saw had been seen before—except one thing. That one thing was a balloon filled with helium gas. That was absolutely new, and the delegates from foreign countries will remember it after they go back home. Once again the mines must be credited with making a material contribution toward the progress and well-being of mankind. And so will it always be.

MINES FINANCE PUBLIC SCHOOLS

THE PUBLIC WELFARE is considered by the mining companies, even where the expenditure of their private funds is involved. An instance was brought out recently in a hearing before the Senate Committee on Education and Labor, which for several months has been investigating the West Virginia situation. When Walter R. Thurmond, president of the Logan Coal Operators' Association, was questioned regarding the aid extended by coal producers to the schools of Logan County, he presented a statement prepared by the superintendent of schools of Logan County, containing the following:

"The work of the various coal companies of this county in behalf of our schools stands out conspicuously owing to the fact that we have sections in Logan County where coal companies do not operate. From the standpoint of our public schools these sections present a great contrast to those sections where coal companies are operating. Where coal companies have not come in Logan County, is where we have our vacant schools, where we have no playground apparatus, the school ground not fenced, and the old-fashioned school house standing as it stood years ago. Why? Because Boards of Education are not able to raise enough funds under the law to remedy those situations in a single day.

"Where coal companies are operating, after Boards of Education have gone their limit to bring about good schools, the coal companies take the matter up and do whatever else that is necessary to make the school a success. They are often called upon to supplement teachers' salaries, to build school buildings, or to furnish a teacher. In most cases whatever is needed is done."

The county superintendent's statement showed, further, that one coal company completed a school where the county board was unable to do so at a cost of \$12,500, that another completed a school at a cost of \$3,000 and still another did the same at an outlay of \$1,200. None of the money has been paid back and the county superintendent asserts with frankness that he does not know if it ever will be.

Epitomizing some of the expenditures of the coal companies in behalf of education, the superintendent shows that teachers' salaries have been supplemented this year by different companies to the amount of \$6,000, teachers have been provided and equipped at a cost of

\$2,000, playground apparatus has been installed at a cost of \$5,000, school houses have been painted and fenced at a total outlay of \$3,000, and twenty-five buildings costing \$2,500 have been furnished for negro schools.

Concluding his statement, the superintendent makes the assertion that "it would be conservative to say that the coal companies of Logan County, in addition to having paid their proportion of school taxes, have contributed in one way or another to the benefit of the public schools "not less than \$100,000 recently.

FINANCIAL RECONSTRUCTION

IT is generally understood by the public and industrial leaders that the prosperity of this nation depends to a considerable extent upon our foreign trade. The American worker knows that foreign trade enters into the question of his full time and amply paid employment. A large percentage of the present unemployment in the country is due to the recent decline in our export trade.

The extent of the decline in our foreign trade is best evidenced by the facts compiled by the United States Shipping Board eliminating dollar valuations which are fluctuating and not suitable for comparative deductions.

According to these figures, in the three months ending September 1920, total water-borne imports into the United States amounted to 8,996,383 tons, while in the same three months of the present year they were 5,484,908 tons, a decline in weight of thirty-nine percent. The weight of water-borne exports declined in the same months from 16,778,124 tons to 13,513,269 tons, a reduction of twenty percent. If shipments of oil in bulk and Great Lakes cargoes are omitted from the comparison, the remaining sea-borne cargoes show a far greater contraction in the last few months than do the foregoing totals. The figures for imports then become 5,081,095 tons in the third quarter, 1920, and 2,346,998 tons in the same quarter of 1921, a decline of fifty-four percent. Sea-borne exports, excluding oil in bulk, are given as 15,539,787 tons in the third quarter, 1920, compared with 8,152,327 tons in the same period this year, the decline being forty-seven percent.

The problem is how to arrest this decline in foreign trade and provide for its normal restoration. This depends upon the restoration of a more normal foreign purchasing power which means the financial and industrial reconstruction of foreign, principally European, countries.

Any plan formulated to remedy the exchange situation must be based upon the fundamental premise that the depreciating and fluctuating currencies of foreign countries are the result and not the cause of the economic conditions which prevail. The causes must be removed before normal financial and currency conditions can be restored.

One of the most disturbing and depressing influences upon all foreign exchanges has been that of the German mark, which has declined with each effort to purchase gold wherewith to meet reparations payments in accordance with treaty terms. Germany has also greatly expanded her currencies for the purpose of making up budget deficiencies. In comparison to her need for gold for reparations payment, the expansion of her currency has been very much greater on account of the latter condition. These conditions have been recognized by the Reparations Commission, and the conference which has been called to deal with the subject will no doubt develop methods of payment which will have a tendency to stabilize the mark and lessen, if not remove this disturbing element.

Another cause is the unbalanced condition of the bud-

gets of many foreign nations. Instead of balancing expenditures with income from taxes and duties, many nations have been meeting their current obligations by issuing new currency. This practice has depressed the value of the currencies of many nations. It is hoped that the Limitation of Armaments Conference will effect economies in the expenditures of nations for military and naval purposes which should make possible the better balancing of national budgets and greatly improve the currencies and credit standing of all nations. Until this is an accomplished fact one of the most important causes for the present condition cannot be removed.

The funding of our foreign debt upon a basis which will not impose too great financial burdens for the present upon those countries which are in the most serious financial condition will assist greatly in restoring the financial and industrial poise of Europe upon which economic reconstruction depends. It is reassuring that President Harding in his message urges that Congress provide authority to deal with this important but most complex situation. Until this debt is definitely funded no great improvement in the financial affairs of Europe can be expected. Foreign debt cancellation is out of the question but any further postponement of funding the debt is inexcusable and will impose further losses upon our foreign trade.

With these things done, these fundamental causes removed, we should proceed with an international currency conference to determine how best the United States may serve as a creditor nation in hastening the economic recovery of Europe and other foreign nations. Europe cannot now purchase the raw material to put her people to work, while the United States has over a billion dollars surplus gold upon which a credit could be created for use in foreign countries. As a creditor nation we cannot escape the responsibility for extending under proper conditions this credit upon which not only the economic recovery but the social security of the world depends. To do this will mean the restoration of our own foreign trade. The opportunity will soon have arrived when this program can be put into effect. Are we prepared to meet the situation?

WATER POWER AND MAN POWER

EVEN yet the claim is made that the natural result of the invention and installation of labor-saving machinery is to take good jobs away from working men. This claim is still put forward in the face of the fact that jobs are more plentiful and wages higher in those countries which operate with the most modern machinery than in those backward regions which make no pretense of being up to date.

Those who still cling to such an opinion will find food for thought in the first report of the Federal Power Commission. Net applications for development of hydro-electric power call for 16,826,000 horse-power of installation. The Commission considers it a "very conservative" estimate that each horse-power of developed energy, used industrially, means employment for one skilled workman. Manifestly, for every skilled workman so engaged there must be several other workmen, skilled and unskilled, employed in feeder and consuming industries. Conservative calculation easily establishes the fact that the development of our latent hydro-electric resources would be the means of support for several millions of additional population.

Installation of labor-saving machinery, and every other step taken in the direction of increasing production or lowering its costs, instead of abolishing jobs actually creates new jobs and enlarges the health, wealth and happiness of the working man.

1922 CONVENTION AND EXPOSITION TO BE HELD IN CLEVELAND

CLEVELAND, Ohio, has been selected as the meeting place of the Twenty-fifth Annual Convention and National Exposition of Mines and Mining Equipment of the American Mining Congress.

The selection of Cleveland as the next meeting place for this important industrial event is particularly appropriate because Cleveland has been largely built up as a result of mining activities. Cleveland is one of the great centers for the iron ore industry and it is a strategic point to which the great ore supplies from the Lake Superior district are brought for distribution to the important iron and steel districts.

as the Union Passenger Station, while at the same time the building has an unobstructed view of the harbor and of the waters of Lake Erie. Railway freight terminals are conveniently at hand, making it possible to secure the maximum dispatch at minimum expense in transferring exhibits to and from the building. There are very few cities which can offer such a remarkable exposition and convention building practically in the center of the downtown district.

EXHIBIT AREA

As indicated above, the building provides for approx-



THE CLEVELAND PUBLIC HALL

In addition to its importance as a center for iron ore activities, Cleveland is also the headquarters for a great body of coal mining operations, including the important Pittsburgh Vein Operators' Association, and, as the largest city in Ohio, it is also a natural center for many of the great oil companies which have a considerable part of their oil operations throughout the state.

In addition to these reasons, the municipal government of Cleveland is now completing what is perhaps the finest exposition and convention building in the United States. This building will probably house both the convention and the exposition, thereby avoiding any of the confusion which almost inevitably results when convention sessions are held in a different building from that in which the exposition is staged.

LOCATION

One of the especially noticeable features of the Cleveland Public Hall is the fact that the location of the building is within easy walking distance of the principal hotels, theatres, retail and wholesale business districts, as well

imately sixty-five thousand square feet of exhibit area. The space is divided into two floors—the exhibition hall, especially designed for machinery expositions comprising a lower floor and the arena which is the main floor of the convention auditorium.

The exhibition hall is two hundred and thirty-five feet long by one hundred and twenty-one feet wide, containing twenty-eight thousand five hundred and fifty-three square feet of floor space broken only by building columns which in turn furnish service stations for direct connections with gas, compressed air and other types of power and drainage facilities.

Adjoining the exhibition hall at the south are two rooms each fifty by twenty-three feet. These can be used for display or for conference rooms and will accommodate approximately one hundred and sixty-five people.

In addition to the exhibition hall area, the arena floor is two hundred and forty-seven feet long by one hundred and twenty feet wide, containing twenty-nine thousand six hundred and forty square feet of floor area.

EXHIBIT SERVICES

One of the notable features of the Cleveland building from the exhibitors' standpoint is the provision which has been made for giving to the exhibitor direct contact for connections with all types of power, including hot and cold water, compressed air, gas, high pressure steam, vacuum, three types of electric current for power or decorative purposes and drainage for waste water. The exhibition hall is furnished with these connections through the service stations in the building columns, while on the arena floor similar services are obtained from cabinets located in a row of pockets running through the center of the floor.

Both the exhibition floor and the arena floor are connected together by low graded ramps running between the floors and the street levels, making the building particularly attractive for exhibit purposes as it is so convenient to move from one floor to the other.

and can be completely shut off from the exhibits on the arena floor, thereby making it ideal for convention purposes. In addition there are sixteen rooms in the building which can be used as committee rooms, seating anywhere from fifty to one hundred and seventy people.

The architects in designing the building have kept carefully in mind the requirements of the exhibitors for storage and there is approximately twelve thousand four hundred square feet provided for the storage of crates and boxes.

The building is modern in every respect and will be equipped with telegraph offices, telephone booths, barber shop, check rooms and other features which will make the building complete in every respect.

The Cleveland exposition and convention hall therefore furnishes an unusual opportunity for an attractive and effective setting of the exposition and convention.

The possibilities of the Cleveland building will be fully



INTERIOR VIEW OF MAIN ARENA

ELECTRIC CURRENT AND ILLUMINATION

The electric current available in the building for all purposes is approximately fifteen hundred kilowatts, five hundred kilowatts being direct current and one thousand kilowatts alternating current. The entire arena and auditorium are illuminated by one thousand and seventy-five lamps of two hundred kilowatts each, located behind a field of glass panels in the ceiling eighty feet above the floor of the arena, and there is of course special illumination for the exhibition hall which the ceiling has a clearance of sixteen feet above the floor of the hall.

The floor of the exhibition hall is granolithic asphalt upon a concrete foundation with a strength of six hundred pounds per square foot, thereby making it particularly suitable for the heaviest type of machinery exhibit. The arena floor is wood imbedded in mastic upon concrete foundation with a strength of two hundred and fifty pounds per square foot.

The great stage at the south end of the arena floor has a seating capacity of approximately one thousand persons

utilize! by the Convention and Exposition Management and in order to stage a particularly attractive exhibit it is planned to construct all of the fixtures for the exposition under the direct supervision of John E. Miller, Superintendent of the exposition.

By combined effort and with the co-operation of the manufacturing concerns, it is expected that it will be possible to increase the number of industrial exhibitors to practically double the number who participated in the exposition at Chicago.

These national expositions of mines and mining equipment furnish a splendid opportunity for manufacturing concerns to secure national advertising and a contact with representative mining men from every important mining district in the United States, and it is believed that this twenty-fifth annual meeting in Cleveland will bring out an extremely large attendance and that with co-operative effort it will be possible to make this exposition and convention one of the largest and most significant industrial events which has ever taken place in the country.

FEDERAL TAXES FOR 1921

By MCK. W. KRIEGLI

Chief of the Tax Division, American Mining Congress

FEDERAL income and excess profits taxes for the taxable year 1921 will be assessed and collected under the provisions of the revenue act of 1921 which specifically repeals preceding laws, materially changes or eliminates many of the provisions of the 1918 law, and contains a number of new provisions of importance. Revised regulations and forms for returns are now being prepared and therefore this article insofar as it refers to the application of the new act to returns for 1921 must necessarily be subject to the official interpretations to be given in the new regulations. The purpose of this article is to give a general resume of the new law and in particular to discuss the practical aspects of some of the more important provisions which may affect individuals and corporations engaged in mining, so that taxpayers may avoid errors in the preparation of their returns and later difficulties with the Bureau of Internal Revenue. The new act became effective November 23rd, 1921, "unless otherwise provided for," exceptions, among others, being the excess profits tax repeal, the elimination of surtax rates above 50 percent, and the increased income tax on corporations to 12½ percent, all of which are effective as of January 1, 1922.

TAX RATES

The individual income and surtax rates for the calendar year 1921 are unchanged, the normal income tax rate being 4 percent on the first \$4000 of net income in excess of personal exemptions, and 8 percent on the amount of such net income in excess of \$4000. The surtax rates range from 1 percent on the amount of net income between \$5000 and \$6000 to 65 percent of the amount of net income in excess of \$1,000,000. The rates for income and excess profits taxes on corporations for the calendar year 1921 are unchanged, the income tax rate being 10 percent on the amount of net income in excess of the \$2000 exemption, (except that in the case of corporations whose income is more than \$25,000, this exemption is denied), and the excess profits tax rates being 20 percent of the amount of net income in excess of the excess profits tax credit, (i. e., a specific exemption of \$3000 plus an amount equal to 8 percent of the invested capital for the taxable year), and not in excess of 20 percent of the invested capital; and 40 percent of the amount of net income in excess of 20 percent of the invested capital. A special provision is made in the case of corporation net income in excess of \$10,000 derived from any government contract made between April 6, 1917 and November 11, 1918.

EXEMPTIONS

Exemptions allowed in the case of individuals are as follows: Single persons, and married persons not living with husband or wife, \$1000; non-resident aliens \$1000; married persons living with husband or wife and heads of families \$2500, unless the net income is in excess of \$5000, in which case the personal exemption is only \$2000; married persons and heads of families are allowed an additional exemption of \$400 for each dependent. The act provides that in no case shall the reduction of the personal exemption from \$2500 to \$2000 operate to increase the tax which would be payable if the exemption were \$2500 by more than the amount of net income in excess of \$5000. This is to overcome the disparity in the case of two taxpayers, one of whom is just within the lower \$2000 exemption and the other just within the higher \$2500 exemption. The \$2000 exemption heretofore allowed corporations will now apply only to corpora-

tions whose net income is \$25,000 or less; but if the net income is over \$25,000 the denial of the \$2000 credit shall not operate to increase the tax, payable if such credit were allowed, by more than the net income in excess of \$25,000.

RETURNS

Persons who must make returns are as follows: (1) Every individual whose net income exceeds the exemptions allowed, excepting that allowed for dependents; (2) every individual whose gross income exceeds \$5000, regardless of net income; (3) every fiduciary (except a receiver appointed by authority of law in possession of part only of the property of an individual, and individuals whose personal exemptions relieve the fiduciary of liability for return); (4) every partnership; (5) every corporation (except corporations specifically exempted); and (6) personal service corporations. In general, all individuals, corporations, and partnerships, in whatever capacity acting, making payments to other individuals, corporations, or partnerships of \$1000 or more in any taxable year are required to make information returns in regard to such payments, specifying the amounts, and giving the names and addresses of the recipients of such payments. Such returns of payments of interest on corporations' obligations and collections of foreign items may be required regardless of amount.

Returns must be made under oath and must be filed within two months and fifteen days after the close of the taxable year in the office of the collector for the district in which the taxpayer's residence or principal place of business is located, and returns made on the calendar year basis are due on or before March 15, 1922, but in the case of a corporation not having an office or place of business in the United States the return is to be made within six months after the close of the taxable year. Full payment of taxes may be made at the time of filing the return or in four equal installments, as under the 1918 law. The Commissioner of Internal Revenue may grant a reasonable extension of time for filing returns whenever in his judgement good cause exists; but no such extension can be granted for more than six months except in the case of taxpayers who are abroad. If a taxpayer, with the approval of the Commissioner, changes the basis of computing net income from fiscal year to calendar year or vice versa, or from one fiscal year to another, a separate return is required for the period between the close of the former taxable year and the date designated as the close of the new taxable year.

TAXABLE INCOME

The income tax, excess profits tax, and surtaxes imposed by the revenue act are in general upon net income, i. e., gross income less exempt income and statutory deductions and credits; but in determining the taxable net income for the purpose of the surtax, the credits provided in the case of the normal tax are not applicable. Gross income includes all gains and profits and income derived from any source whatever, actually received for the year for which return is made, whether paid in cash or otherwise, subject to the specific exemptions listed in sections 213 (b) and 231 of the new law. Gross income excludes the items of income specifically exempted by statute and also certain other kinds of income by statute or fundamental law free from tax. Net income is the amount remaining after taking from gross income all allowable deductions listed in sections 214 (relating to individuals) or 234 (relating to corporations) of the new act.

Deductions permitted by the new law are the same, except for a few minor changes, as those specified in the 1918 law. Briefly stated, they include: (1) all ordinary and necessary expenses, including traveling expenses which have not been deductible heretofore; (2) interest on indebtedness, except indebtedness incurred to purchase non-taxable securities other than war obligations of the United States originally subscribed for by the taxpayer; (3) taxes, including federal taxes (except income, war profits, and excess profits taxes), state and local taxes (except taxes assessed against local benefits of a kind tending to increase the value of the property assessed), and taxes imposed by possessions of the United States or by foreign countries (except the amount of income, war profits, and excess profits taxes allowed as a credit against the tax); (4) losses sustained during taxable year and not compensated for by insurance or otherwise; (5) debts ascertained to be worthless and charged off within the taxable year, including under certain conditions, losses from debts recoverable only in part; (6) dividends received (a) from a domestic corporation other than one entitled to the benefits of section 262 relating to corporations which derive income from sources within possessions of the United States, or (b) from any foreign corporation when it is shown that more than 50 per cent of its gross income has been derived from sources within the United States; (7) depreciation allowance for the exhaustion, wear and tear of property used in the taxpayer's trade or business, including a reasonable allowance for obsolescence; (8) a reasonable allowance for amortization of war facilities if claim therefor was made at the time of filing return for the taxable year 1918, 1919, 1920, or 1921; (9) a reasonable deduction for depletion of natural deposits and for depreciation of improvements; (the new law limits this allowance based on discovery value to the amount of net income, computed without the allowance for depletion, from the property upon which the discovery is made, except where such net income so computed is less than the depletion allowance based on cost or fair market value as of March 1, 1913); (10) under certain conditions, a deduction may be taken in respect of the proceeds or gains derived from the compulsory or involuntary conversion of property into cash or its equivalent. In the case of foreign corporations, or of corporations deriving income from sources within possessions of the United States, the foregoing deductions are allowable only if and to the extent that they are connected with income from sources within the United States. In computing the net income either of individuals or corporations, no deductions are allowable in respect of (a) personal, living or family expenses; (b) any amount paid out for new buildings or other permanent improvements or betterments made to increase the value of any property or estate; (c) any amount expended in restoring property or in making good the exhaustion thereof for which an allowance is or has been made; or (d) premiums paid on any life insurance policy when the taxpayer is directly or indirectly a beneficiary under such policy.

In the case of the deduction for losses, no deduction is allowable for any loss claimed to have been sustained in any sale of shares of stock or securities made after the passage of the new act, November 23, 1921, where it appears that within 30 days before or after the date of such sale the taxpayer has acquired identical property (otherwise than by bequest or inheritance) in substantially the same amount as the property sold and the property so acquired is held by the taxpayer for any period after such sale. Where the new acquisition is to the extent of part only of substantially identical property, then a proportionate part of the loss is deductible. Dealers in stocks or securities are exempted from the operation of this rule with respect to transactions in the ordinary course of business. Losses arising from destruction of or damage to property acquired prior to March 1, 1913, are to be computed upon the basis of the fair market value of the property as of that date.

CREDITS

In the case of individuals the credits allowed for the purpose of the normal tax, in addition to the specific exemptions mentioned heretofore, are as follows: (a) dividends (1) from a domestic corporation other than a corporation deriving income from sources within possessions of the United States under the special provisions covering such corporations, or (2) dividends of foreign corporations, under certain conditions, which derive more than 50 percent of their gross income from sources within the United States; (b) interest upon obligations of the United States and bonds issued by the War Finance Corporation. The credits allowed corporations for the purpose of the normal tax are: (a) interest upon obligations of the United States and bonds issued by the War Finance Corporation; (b) a specific credit of \$2000 where



CRITICAL MOMENTS

—Herbert Johnson, in Spokane Spokesman Review.

the net income is \$25000 or less; (c) excess profits taxes. The excess-profits credits consist of a specific exemption of \$3000 plus an amount equal to 8 percent of the invested capital for the taxable year.

NET LOSSES

Under the 1918 law a business operated at a net loss during any taxable year beginning after October 31, 1918, and ending prior to January 1, 1920, could have such net loss credited against the preceding taxable year. The new law allows a net loss incurred in trade or business in any taxable year after 1920 to be credited against the first succeeding taxable year, or the second succeeding taxable year if such loss is in excess of the net income for the first succeeding taxable year to the extent of such excess. The only net losses recognized are those resulting from the operation of any trade or business regularly carried on by the taxpayer. The provision defines a "net loss" as the excess of the deductions allowed by section 214 or 234, as the case may be, over the sum of: (1) the gross income of the taxpayer for the taxable year, (2) tax free income, (3) the amount by which deductible losses not sustained in such trade or business exceed taxable gains or profits not derived from such trade or business,

(4) amounts received as dividends and allowed as a deduction, and (5) so much of the depletion deduction allowed with respect to any mine, oil or gas well as is based upon discovery value in lieu of cost. In view of the fact that March 1, 1913, value is omitted, it is assumed that depletion based upon March 1, 1913, value is deductible in computing a net loss under this provision.

MISCELLANEOUS

Not all of the changes made in the new law became effective upon its passage or are applicable to the calendar year 1921, and therefore no reference is made to new provisions which do not become effective until January 1, 1922. Space does not permit a detailed discussion of the whole act, but among the provisions which are of general interest are those relating to dividends, basis for determining gain or loss, gold mining companies, and procedure.

DIVIDENDS

Dividends of domestic corporations, except those deriving income from within possessions of the United States under the special provisions covering such corporations, are not liable to the normal tax on individuals. Also dividends of foreign corporations which derive more than 50 percent of their gross income from sources within the United States under certain conditions are free from such tax. Stock dividends are specifically exempted from the income tax, as required by the decision of the Supreme Court in *Eisner v. Macomber* (252 U. S., 189); but the subsequent cancellation or redemption of the stock of a corporation making a distribution of stock dividends may operate to render the transaction substantially equivalent to the distribution of a taxable dividend, in which case it will be treated as such. The new law further provides that a taxable distribution made by a corporation to its shareholders shall be included in the gross income of the latter as of the date when the cash or other property is unqualifiedly made subject to their demands.

BASIS FOR DETERMINING GAIN OR LOSS

The basis prescribed for determining gain or loss resulting from the sale or disposition of securities and other property in general is the cost of such property; but in the case of property acquired before March 1, 1913, the basis is the cost or the fair market value as of March 1, 1913, whichever is higher, in determining gains, and whichever is lower, in determining losses. If the amount realized is more than the cost but not more than such fair market value, or less than cost but not less than such fair market value, no gain or loss is recognized. Where there is an exchange of property for property no gain or loss shall be recognized unless the property received in exchange has a readily realizable market value. On certain classes of exchanges, specified in the law, no gain or loss is recognized even if the property received in exchange has a readily realizable market value.

GOLD MINING COMPANIES

Under section 304(c) of the new law, corporations engaged in the mining of gold are exempted "from any tax imposed by title II of the revenue act of 1917" on income from gold, and therefore are entitled to abatement of 1917 excess profits taxes on such income which have been assessed but remain unpaid, and to refund of such taxes if paid. The new regulations soon to be promulgated undoubtedly will prescribe rules under which this retroactive provision will be applied; but it is assumed that the Commissioner of Internal Revenue, under new rules of procedure, will authorize abatements and settle refunds

without waiting for the companies entitled thereto to file claims.

PROCEDURE

Important changes in income tax procedure, which will result in prompt adjustment of claims for refund and abatement, are expected in the near future. The new act provides that under certain conditions interest shall be paid upon claims for refund from the date of the payment of the tax to the date of the allowance of the claim, and efforts are now being made by the Bureau of Internal Revenue to adjust within six months, all claims now pending and thereafter to keep the work current. The Bureau announced during the month of December that taxpayers will no longer be advised of their privilege of filing a claim for the refund of taxes which have been paid in excess of amounts legally due, but instead will receive a certificate of over-assessment and a check in correction of the error; or if an assessment is outstanding against the taxpayer for income or excess profits tax, the overpayment will be applied as a credit against the assessment, and the balance immediately refunded. This is a radical departure from former methods of procedure, and should be of distinct financial advantage to both the taxpayer and the Government. Taxpayers may continue to file claims for abatement and refund, but it is expected that the number of such claims will be greatly reduced under the new regulations. The Tax Simplification Board, created under the new act, is now engaged in revising forms and regulations needed for the administration of the law, and has held a number of conferences with representatives of various industries for the purpose of considering suggestions and recommendations made on behalf of such industries. It is not probable that the new regulations will be ready for distribution before February 1, but the Tax Division, American Mining Congress, will publish special bulletins from time to time, and shall be pleased to assist as much as possible anyone interested in the practical interpretation of the Revenue Act of 1921.

NATIONAL PARKS MORE POPULAR

FACTS OF INTEREST to mine owners are shown in the annual report of the director of the National Park Service submitted to the Secretary of the Interior. Practically all of the national parks are situated in the western mining states. All work and money expended by the government upon them has a tendency not only to improve contiguous property but to relieve property owners of physical burdens.

Director Stephen T. Mather in his report makes the specific recommendation that the federal government assist in the building of a national good roads system, and advocates the location of roads to and within the various national parks and monuments to complement this national system. The parks, the director says, are the lodestones of travel in their respective localities, and unless roads inside the parks match those traversed to the park gates our park visitors will be disappointed and travel will finally suffer.

The construction of roads connecting with state and county roads thus completing projected systems has been advocated by various organization to which many mine owners belong.

During the last fiscal year 1,171,797 persons visited the national parks. This number was 113,342 in excess of those of the preceding year. It is quite an increase over 1916, when only 356,097 people visited the parks.

STANDARDIZATION OF METAL MINE ACCOUNTS AND COSTS

By T. O. McGRATH

Chairman, Committee On Standardization of Metal Mine Accounting

NOT so many years ago the majority of the proven metal mines produced high grade ores which gave a margin of profit sufficiently large that it was considered necessary only to know at the end of each period what was the total operating expense and what the total production and its value at sales or ruling market prices. This gave the manager and directors the information as to what could be available for dividends, and any accounting and costing to get more than this was considered superfluous. As this method of accounting and costing was usually upon the cash instead of the accrued basis, it was common for disappointments as to costs and profits to occur at the end of the year when disbursements had to be made to cover expense that had been accruing.

With such an inadequate system of cost determination, the practices of "sweetening" and of striving for low tonnage costs were popular. However, it was eventually discovered that to obtain low tonnage costs by mining extra ore of low grade that would not pay its way without fixed overhead, and in many cases would not even pay the direct cost of labor, supplies and expense, reduced the net earnings, in spite of the lower tonnage cost. The operating man then became interested in knowing not only his total cost for each grade of ore, but also what was the direct production cost and what the overhead, and how to obtain the greatest net earnings regardless of the tonnage cost. Whereupon more complete cost systems were introduced and the accrued expense taken up against each period's production, and the operating man began to strive to obtain the greatest amount of recoverable metal instead of tons per man shift, and to get the lowest possible marketable cost without the sacrifice of recovery and grade, instead of the lowest possible tonnage cost at mine, mill, and smelter.

IMPROVED ACCOUNTING DEMANDED BY IMPROVEMENTS IN BUSINESS

During the past ten years there have been great changes in the metal mining business. As shown by table No. 1, metal production has been increased enormously, principally as a result of the following:

1. The replacement of small independent producers of simple organization and direct supervision by combinations operating on a large scale with complicated organizations and indirect supervision;

2. The introduction of new metallurgical processes, improved mechanical equipment and efficiency methods;

3. The mining and treatment of large tonnages at a small margin of profit instead of small tonnage of high grade ore at a large margin of profit.

These changes have made many of the old accounting and cost systems inadequate or inefficient, and have made the production operations so complicated and extensive that it is now impossible for any one man to properly supervise and direct the production operations by personal

contact only, and has necessitated careful and properly compiled accounts, costs and statistics of the operating results of each period as a guide to the manager and his assistants.

In addition to the above further complications have been injected into the business of metal mining, as well as in all other industries, as a result of:

1. The large increase in the tax burden of Federal, State, County and Municipal government, and the complication of the tax requirements.

2. The necessity of having accurate and intelligent costs and statistics upon which to base bonus and sharing of economies with workmen, etc., and that can be easily understood by the workmen or their representatives;

3. The increase in competition in the sale of products, requiring better knowledge of markets and market conditions.

All of these requirements have made it imperative that accurate accounts and costs be kept so as to give the operating executives the necessary data to keep them fully informed and to guide them in intelligent and efficient production, management and sales.

The tax burden especially has become so great as to demand that the metal mine operators ascertain their accounting and cost data in as uniform a manner as possible so that the taxing bodies may have correct information to guide them in properly distributing the burden to the industry and to each individual unit of the industry without working a hardship upon the industry or any part of it.

The business having become highly technical in its nature and requiring trained men who must understand

and properly interpret and utilize cost data, the great advantage to the operator of standardization and uniformity in cost methods is becoming apparent to all, especially to operating executives when changing from one unit to another unit of the industry having a different method of accounting and costing which must be mastered in order to get a thorough grasp of operating results.

WASTING ASSETS AND RESOURCES

It is true, that the law of supply and demand, and not costs, determines prices and that during periods of depression, or over-production, the product may have to be sold for less than its total cost or operations suspended, of which the metal mining industry is well aware at the present time.

However, during periods of depression when the demand is less than the producing capacity of the industry, it is necessary to know how much below the total cost the mine operator is warranted in selling his production before he begins to waste his assets as well as his resources.

A mine operator producing metal during periods of depression and selling it at less than the total cost must get a price that will reimburse him for the amount of his direct expense of labor and supplies, the amount of the



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wear and tear on his equipment, plus the amount of the investment in the metal extracted and for that amount of his overhead that could be dispensed with were production discontinued. Otherwise his loss may be greater than if he closed down altogether and took care of his fixed overhead charges only, as by operating he would, in addition to dissipating his surplus, be wasting his metal resources on which he might earn a profit at some later date.

If the resources of a mine are large and operations are on a large scale, as long as the product can be produced and sold at a price that will return the amount of the operating expense plus his investment in equipment and property, and less the fixed overhead that would have to be met in any event, it is best to continue production, as the deterioration in mine workings and the expense of breaking in a new crew and organization will more than offset the probable earning on the metal extracted during the period of depression which would have been saved by a shut down.

However, when the resources of a mine are small, or uncertain, it is best to discontinue production when a period of depression sets in with market prices below total production costs, otherwise the larger amount of the mine's resources may be dissipated before the market prices would be such as to allow production at a profit.

It is impossible to know what should be done in most cases during periods of depression unless the accounting and cost methods give correct data and there is sufficient statistical information for reference.

NECESSARY TO OBTAIN LOWER COSTS IN THE FUTURE

By reference to table No. 1, it will be seen that the production of pig iron for the ten year period ending with 1919 was 80.43% of the total production in the United States from 1830 to 1909 inc.; that the production of copper for the ten years ending with 1919 was equal to the total production from 1845 to 1909 inc.; that the production of lead for this ten year period was 62.32% of the total production from 1825 to 1909 inc.; that the production of zinc for the ten year period was 132.21% of the total production from 1873 to 1909 inc., and that the production of aluminum for the ten year period was 80.71% of the total production from 1883 to 1909.

Considering the fact that a large percentage of this enormous production for the ten years ending with 1919 was exported either as raw materials or finished products to Europe and other foreign countries, which are now in such financial condition that they cannot take even an amount equal to pre-war times without creating a heavy balance of trade against them which they have found difficult to meet, it is evident that the metal industry of the United States will have to solve the problem of obtaining low costs on less than capacity production for some years to come, or until the natural growth of this country, or the recuperation of the rest of the world, is sufficient to create a demand equal to the present producing capacity of the metal industry.

In addition to this problem, there are many indications that there will be a lowering of prices in the United States for the next ten to twenty years to meet foreign competition having cheap labor, which we must meet with heavier tax burdens and greater demands from labor than in the past. All of which emphasizes the need for determining accurate and uniform costs based upon correct principles by all metal mines. The government has endeavored to stimulate an interest in this matter for a number of years and a large number of industries other than mining have already worked out these problems for their lines, which have been of great assistance in enabling them to protect their investments, to obtain economies and to insure themselves against ruinous competition.

WORKING OUT A STANDARD OF ACCOUNTS AND COSTS

The American Mining Congress, realizing the benefit that would accrue through standardization in the mining industry, has appointed committees to work out recommended standards of operating procedure, equipment, etc., one of which committees being delegated to accounting and costs. This latter committee has been at work since last June towards this end, and has divided the metal mines into four groups of:

1. Base Non-ferrous Metal Mines;
2. Base Ferrous Mines;
3. Precious Metal Mines, and
4. Rare Metal Mines,

and is now compiling all the available data and applying its endeavors to work out something constructive that it may recommend for the metal mines.

It hopes to work out recommendations for the following, at least:

1. A Standard List of General Accounts that will properly record the receipts and disbursements;
2. A Standard Profit and Loss or Income Account;
3. A Standard form of Balance Sheet;
4. A Uniform Method of determining Production and Operating Departmental Costs.

In working out its standard list of general accounts, the requirements of the Treasury Department governing returns for purpose of income tax will be met. It is not necessary to detail the value of a uniform profit and loss account and balance sheet to the investors in mining securities and the general public, nor to the directors and officers of mines who fully realize the importance of a properly arranged and grouped balance sheet at the end of each period, to properly inform them of the condition of the business. The deciding upon a uniform method of determining the production cost and of compiling operating departmental and unit costs will be of great interest to the supervisors and directors of production, and if this can be satisfactorily worked out and adopted by the majority of the mines would soon result in the accumulating of a vast amount of useful data and ease the pathway of the production supervisor.

The committee is open for suggestions and would welcome anything that any one may wish to present. Suggestions or data may be presented either to any member of the committee, or sent direct to the chairman.

TABLE NO. 1.—SUMMARY OF BASE METAL PRODUCTION IN THE UNITED STATES

Metal	For decade 1860-69	Total production up to 1909 inc. ⁴	For decade 1910-1919	% of last decade to total up to 1909 inc.
Pig Iron ¹ . . .	10,523,000	389,188,626	313,020,681	80.43
Copper ¹	92,146	6,339,640	6,346,600	100.11
Lead, ²	153,900	7,472,422	4,656,628	62.32
Zinc, ²	None	3,331,338	4,404,459	132.21
Aluminum, ³ . . .	None	135,862,779	1,096,502,800	807.10

¹ Pig Iron and Copper shown in long tons.

² Lead and Zinc short tons.

³ Aluminum shown in pounds.

⁴ Total Production to 1909 inclusive is for years

Pig Iron, 1830 to 1909, inc.

Copper, 1845 to 1909, inc.

Lead, 1825 to 1909, inc.

Zinc, 1873 to 1909, inc.

Aluminum, 1883 to 1909, inc.

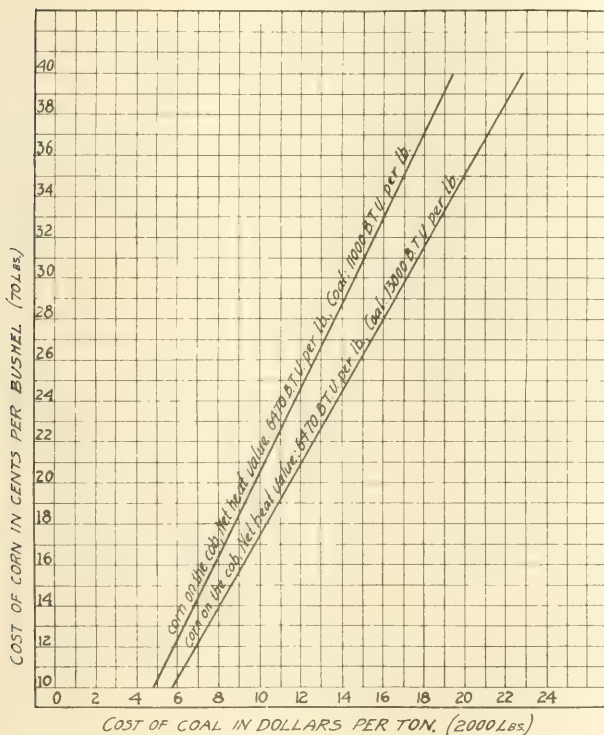
COMPARATIVE FUEL VALUES OF CORN AND BITUMINOUS COAL

POUND FOR POUND, corn has a heating value about half that of coal. A bushel of husked corn weighing seventy pounds would contain a heat value equivalent to from thirty-four to forty-one pounds of coal, depending on the quality of the coal. If the coal were of the very best navy coal, the equivalent would be only about thirty-one pounds. Fifty to sixty bushels of corn on the cob have the same heating value as a ton of coal.

This information is contained in a memorandum

WHEN CORN IS CHEAP AS COAL

The diagram below, prepared by the United States Bureau of Mines, shows the relative prices of corn and coal having approximately the same heating value



recently submitted to Secretary Henry C. Wallace of the Department of Agriculture by O. P. Hood, chief mechanical engineer of the Bureau of Mines, under whose supervision numerous investigations in the use of other fuels in house heating equipment have been carried out. This information was requested by Secretary Wallace after he had visited the Middle-West, where the farmers were finding it difficult to market their corn.

Heating value of fuels is expressed in British thermal units, the number of units being equivalent to stating the number of pounds of water which would be heated one degree Fahrenheit if all the heat in the fuel were thus employed.

Corn, in its various conditions of dryness and whether the grain, the cob, or the whole ear is used, varies from 6,000 to 8,000 B. T. U. per pound. In those districts where corn is likely to be considered as a fuel, the memorandum stated, the coal available is not of the very best and the heating value is likely to lie between 11,000 and 13,000 B. T. U. per pound.

A diagram accompanying the memorandum was used to illustrate the conditions under which corn could be considered as a fuel in competition with coal. This diagram shows that if twenty cents per bushel is the price for corn, a good grade of coal must be available at the same place for about eleven dollars and a half, or a coal of less value for about ten dollars. If corn were selling for thirty cents a bushel, the purchase of about \$14.50 worth of corn would furnish heating units equal to that contained in a ton of coal containing 11,000 B. T. U. per pound, or the purchase of about \$17.00 worth of corn would supply heating units equal to that contained in 13,000 B. T. U. coal, which is a very fair grade of western coal.

Several factors are pointed out in the memorandum which tend to make the comparison less favorable for corn. Most stoves are designed for wood or coal and it is regarded as quite probable that if corn were burned as a regular fuel, a fire box better adapted to the use of corn would be developed. When burning corn on the cob in small fire boxes, as in a cook stove, there is a tendency for the charred kernels of grain to fall from the cob before being consumed and to be wasted in the refuse.

The reported experiments, too, are all on small steam boilers and not on the apparatus likely to be used in the farmer's home, so that there is lacking the most conclusive evidence. Factors of this sort, the memorandum states, make it difficult to set a very definite boundary to that field where coal ceases to be the cheapest fuel and where corn might be substituted.

In the accompanying diagram, husked corn has been considered as having a heating value of 6,470 B. T. U. per pound, and seventy pounds to the bushel. Two lines have been drawn on a field, the one referring to coal at 11,000 B. T. U., which is rather poor coal, and the other at 13,000 B. T. U., which is a very fair grade of western coal.

COAL MINE FATALITIES SHOW INCREASE

THE COST in human lives of mining coal was greater during the first ten months of 1921 than during the same period of 1920. The Bureau of Mines report show 1,629 men killed and the production 414,400,000 short tons, as compared with 1,880 killed and a production of 526,000,000 tons. The fatality rate during the first ten months of 1920 was 3.57 per million tons of coal produced, while during the first ten months of 1921 the rate was 3.93 per million tons produced.

There was also an increased fatality rate in the anthracite mines. During the first ten months of 1921, 5.95 men were killed for every million tons mined as against 5.63 per million tons during the parallel period of the year before.

During the month of October 167 men lost their lives in and about coal mines. This was at the rate of 3.25 per million tons. The October 1920 rate per million tons was 3.22, and that of October for the last eight years preceding was 4.38 per million tons.

The report does not enter into the discussion of the reasons for increased fatality rates in both anthracite and bituminous during the current year. It is worthy of note, however, that the increase is shown by comparison with 1920, which itself had the lowest fatality rates on record.

NON-UNION MINERS RECEIVE HIGH PAY AND DO GOOD WORK

SEVENTY-FIVE workmen at fifteen coal operations earned an average of \$313.87 per month, according to testimony given before the Senate Committee on Education and Labor by W. R. Thurmond, president of the Logan Coal Operators' Association.

There was deducted from this wage an average of \$45.78 for store account, \$5.06 for rent and \$1.05 for coal; \$1.29 for doctors' bills, 49 cents for hospital charges, and 38 cents for smithing, 69 cents for electric light and \$9.55 miscellaneous, making total deductions of \$64.29. The net earnings paid in cash to the miners average \$249.58 per month, *after payment of living expenses.*

Mr. Thurmond testified that a survey covering 1,334 houses showed a maximum rental of \$2.50 per room per month. More than half of the houses rent for \$2 a room. The charge for light includes not only lighting, but the use of electricity for electric irons and washing machines, and various modern conveniences, including stoves for cooking. Water is supplied free, and the miners pay from \$1 to \$2 per ton for coal.

Senator Sterling, a member of the committee, was surprised at the amount the workmen were making, in view of the fact that the non-union fields were known to be operating at a profit. After being assured that in some instances non-union workmen were paid as much or more than union workmen in other fields, Senator Sterling asked: "Then how is it that you are not running at a loss?"

"We have so much more efficient labor, Senator, that our men return a good day's work for a fair day's pay, and we are not bothered with strikes and run our mines regularly," Mr. Thurmond replied. "The cost of production is very much affected by the amount of production, and large consumers of coal find it necessary to place their orders in mining fields where they have a reasonable expectation that they will receive a regular supply of coal and will not be interrupted by strikes and these disturbing influences that always occur in union fields."

Mr. Thurmond testified that, notwithstanding market conditions, the Logan district up to October 13 had produced 8,169,319 tons of coal for the year and fully expected to exceed the record of 1918, which was the year of highest production, amounting to 10,228,690 tons.

GOVERNMENT COAL QUESTIONNAIRE

ROCK-BOTTOM FACTS in respect to the use of coal in the government departments are being sought by the sub-committee on coal of the fuel division of the Bureau of Foreign and Domestic Commerce. The sub-committee, of which F. R. Wadleigh, chief of the coal section of the fuel division of the bureau, is chairman, has sent questionnaires to all government departments calling for partial answers on December 1 and 15 and final responses on January 1, 1922.

The questionnaire calls for figures as to the number of tons of anthracite and bituminous used and the amount of money spent for the coal, as well as for its transportation, during the fiscal years 1920 and 1921, and the estimated amounts for 1922. Question 4 calls for the location and capacity of storage plants; the amount usually carried in storage, and the costs of labor, personnel and maintenance per net ton, as well as the total cost of operation per ton, including all fixed charges. Kind of equipment, methods of delivery, whether coal is sampled, analyzed or inspected, whether government, railroad or dealer's weight is accepted, whether the bins are filled in summer or winter, full details of the letting of bids are subjects covered in additional queries.

The concluding questions show the disposition of the sub-committee to accept pertinent suggestions. These questions invite the departments to state whether a central agency should purchase all government coal, to state what time of the year coal should be bought and to make any other pertinent or constructive comment on the present methods of coal purchase by the government.

BITUMINOUS PRODUCTION LOWER

OUTPUT of bituminous coal in November was lower than that of the same month at any time during recent years except in 1914, when general business depression was marked, and in 1919, when all the union mines were idle on account of a strike. The total production, estimated by the U. S. Geological Survey, was 35,955,000 tons, a decrease of 7,778,000 tons, or 18 percent, from October.

During the week ending December 3 production touched the lowest level since April. The total, including lignite and coal coked, was 7,077,000 net tons. The daily rate was 1,179,000 tons, or a decrease of 16 percent as compared with Thanksgiving week. Compared with late October production, the decrease was 36 percent.

The average November production for the last eight years has been 41,002,000 tons, and the average cumulate production for the first eleven months for eight years has been 458,000,000 tons. Production to November 30, 1921, is, therefore, 82,000,000 tons below the average for eight years. The following table shows the November and cumulative production figures since 1913:

BITUMINOUS PRODUCTION

Year	November Production (Net tons)	Cumulative Production to November 30 (Net tons)
1913.....	43,233,000	437,000,000
1914.....	33,392,000	386,000,000
1915.....	44,737,000	397,000,000
1916.....	44,927,000	468,000,000
1917a.....	47,690,000	508,000,000
1918a.....	43,895,000	539,000,000
1919.....	18,688,000a	422,000,000
1920.....	51,457,000	504,000,000
8-Year average.....	41,002,000	458,000,000
1921.....	35,955,000b	376,000,000b

(a) Strike of all union miners. (b) Subject to revision.

DANGER IN ABANDONED MINES

Warning of the danger of oxygen deficiencies which exist in every abandoned mining shaft or pit has been issued by the Bureau of Mines. Such danger, as set forth in the public announcement made by the bureau, really exists in any kind of working where the air has been stagnant for a considerable time. Recently a geologist was killed in California when he entered an abandoned exploratory shaft without making a preliminary test of its atmosphere. In Minnesota a mining engineer was killed by poisonous gases while sampling a shallow pit in iron ore formations.

NOVEMBER ANTHRACITE.—Shipments of anthracite during November, as reported to the Anthracite Bureau of Information, aggregated 5,314,014 gross tons, as compared with 5,872,783 tons during October and 5,765,317 tons during November of 1920.

UPWARD TENDENCY IN ANTHRACITE LABOR COSTS

AN INTERESTING comparison of the labor cost of producing anthracite coal is afforded by the diagram on the front cover of this issue which was prepared by the Anthracite Bureau of Information and which is based on government records.

It will be noted that excepting the two war years, 1917 and 1918, the output of anthracite has steadily decreased, although the trend of wages has been consistently upward during the last eight years.

In other words, where in 1913 it cost \$113,320,000 for labor alone to produce 71,046,816 tons of anthracite, or \$1.595 a ton, in 1920 the labor cost to produce 65,458,673 tons—5,588,143 tons less than in 1913—was \$252,179,000, or \$3.85 a ton, an increase of 141 percent.

These figures are based on commercial fresh-mined coal. Colliery consumption and washery or dredge product are not included.

Anthracite producers believe that mine workers should receive liberal compensation, but they recognize the fact that the price of coal must be reduced in line with the downward movement in all other basic commodities. Labor now absorbs 70 percent of the cost of producing anthracite.

The present wage agreement, which is based on the award of the United States Anthracite Coal Commission, does not expire until March 31, 1922.

Until wages are lowered, a reduction in the mine price of anthracite is impossible.

It is not a question of the operators accepting a smaller profit. If those producers who are making any profit at present were to forego their entire net return, the effect on the mine price of coal would be negligible.

Leading officials of the miners' union have indicated opposition to any decrease in wages at the expiration of the contract. Anthracite producers, however, feel that the question of a readjustment of mine wages will be determined by the opinion of the public, which has a vital interest in the matter.

Should there be no such wage readjustment as has occurred in other basic industries, it would mean that the public must continue to pay the present prices for coal.

FEDERAL CONCILIATORS HANDLE NEARLY 500 LABOR DISPUTES

IN approximately ninety percent of all cases, the Division of Conciliation of the Department of Labor effected a settlement of labor disputes in which it intervened during the last fiscal year, according to the annual report of Secretary James G. Davis. The Secretary has asked Congress for an appropriation to employ extra conciliators, who shall be especially skilled and technically trained in certain complicated industries which are particularly liable to have labor troubles.

The report says that during the fiscal year 1921 the Department of Labor conciliators intervened in 457 industrial disputes, affecting directly 420,745 workers and indirectly 172,261. In all forty-eight of these cases the conciliators aided in effecting a settlement. States in which the greatest number of industrial disturbances occurred were: California, 55 of varied nature and 85 oil disputes; Illinois, 67; Pennsylvania, 51; New York, 22; Indiana, 17; New Jersey, 12; Massachusetts and Ohio, 10 each.

Another work done by the Department of Labor in which the mining business is interested relates to the compilation of statistics upon the cost of living. The Department also publishes statistics on the trend of wages, hours of labor and working conditions, and dis-

seminates general information on labor conditions in America and other countries.

The fact that the Department of Labor not only pays its own expenses but actually returns a profit to the government is shown in the report of Secretary Davis. This fact is not generally known, as the idea has long been prevalent that the Postoffice is the only Department which as a general rule returns a profit. During the last fiscal year the appropriations for the Interior Department totaled \$6,660,888.03. The Department collects, however, considerable amounts in fines for attempted evasion of the immigration laws, by forfeiture of bonds, and in naturalization fees, as well as from other sources. At the end of the last fiscal year, when all of its obligations had been paid, the Department returned to the Treasury the sum of \$24,328.11

AMERICAN WATERPOWER RESOURCES WORLD'S GREATEST

SINCE the passage of the Federal Water Power Act, according to the annual report of the Federal Power Commission, there have been filed 185 applications for preliminary permit and 85 applications for license to develop waterpower. After deductions have been made for rejected applications, conflicting applications and those withdrawn, the applications remaining cover 16,826,000 horsepower of estimated installation. Of this amount, 11,060,000 is primary and 5,766,000 is secondary.

"This," the commission states, "is twice the horsepower which has been developed in the United States to date, and excels the combined potential waterpower resources of Norway, Sweden, Finland, and the Arctic and Baltic drainages of Russia. It is 70 percent greater than the combined resources of France and Italy. It is from five to six times greater than the aggregate of all applications filed with the federal government during the preceding fifteen years.

The commission expresses its belief that the greater part of the horsepower involved in these applications will eventually be utilized. The estimate is made that expenditures involved in doing so will exceed two billion dollars, and that collateral expenditures for distribution systems, customers' installation and in accessory industries will be many times greater.

The applications made from the various states are as follows: Alaska, 31; Alabama, 4; Arizona, 13; Arkansas, 4; California, 80; Colorado, 4; Connecticut, 2; District of Columbia, 1; Florida, 4; Idaho, 12; Illinois, 1; Kentucky, 1; Louisiana, 1; Minnesota, 7; Mississippi, 1; Missouri, 4; Montana, 14; Nevada, 1; New Jersey, 3; New Mexico, 1; New York, 16; North Carolina, 3; Ohio, 2; Oklahoma, 3; Oregon, 10; Pennsylvania, 1; South Carolina, 2; South Dakota, 1; Utah, 6; Virginia, 2; Washington, 18; West Virginia, 2; Wisconsin, 1; Wyoming, 4.

On November 1, final action had been taken by the commission on 89 applications, and 27 preliminary permits and 31 licenses had been authorized, involving 1,415,600 primary and 2,627,000 installed horsepower.

The commission concludes its report with a plea for enlarged personnel.

COAL STOCKS.—Stocks of bituminous coal in the hands of consumers on November 1 amounted to 47,000,000 tons, according to a survey prepared jointly by the Bureau of the Census and the Geological Survey. The amount on hand was 16,000,000 tons, or 25 percent, below the maximum of 63,000,000 tons reached on Armistice Day, and was also the largest at any time since January 1, 1919. Anthracite stocks on November 1 were larger than on the same day of either 1919 or 1920.

BUREAU OF MINES BUDGET FOR FISCAL YEAR 1923

IF CONGRESS appropriates for the 1923 budget as recommended by Director of the Budget Dawes, the United States Bureau of Mines will receive \$1,660,465, which sum is \$186,165 more than the Bureau's appropriation for the current year but is still \$241,000 less than the Bureau requested for next year.

The Bureau of the Budget cut out the following items of appropriation requested by the Bureau of Mines.

OIL SHALE.—Entire appropriation, \$125,000.

COAL.—All but \$5,000 of the \$25,000 requested for investigating storage, sampling and shipping of coal.

PETROLEUM AND NATURAL GAS.—

Natural gas conservation, \$10,000; extension of field work, \$15,000; cracking process, \$35,000.

MINING EXPERIMENT STATIONS.—

New station, \$25,000.

OIL LEASING ACT.—Supervision of Naval Reserves Nos. 1 and 2, \$7,000; deputy mining supervisor, \$4,000.

Heretofore the estimate for the Bureau of Mines has been sent by the Secretary of the Interior direct to the President, who transmitted it to Congress. The Secretary "justified" his estimates—that is, presented evidence showing the need for appropriations as requested—to Congress. This year the new budget bureau comes in between the Secretary and Congress, and preliminary cuts were made by the director of the budget as above indicated, after the Secretary and the Bureau of Mines had presented their "justification" to the budget bureau. Because of the system of co-operation between the budget bureau and department heads, the estimates as cut by the budget bureau have gone to Congress with the approval both of the President and the Secretary of the Interior, and along with the estimates there was sent another "justification" for proposed appropriations as finally approved by the director of the budget. Following is an epitome of this "justification" as it relates to the increases, and in one instance to a decrease, which the budget bureau has approved and which the Interior Department now asks Congress to appropriate:

Testing Fuels—Decrease of \$6,500 asked merely as a matter of book-keeping because the same item could be included more appropriately under the head of "mineral mining."

Investigating Mine Accidents—Increase of \$5,000 asked to provide for employment of another explosive engineer at the Pittsburg experiment station, where the work of testing explosives has greatly increased.

Mineral Mining—For investigating storage, sampling and shipping of coal, new item, \$5,000. The Interior Department's "justification" for this amount—and for which \$25,000 was originally asked—contains the following:

"While the Bureau, in connection with its work of testing fuel for the Government, has studied these problems to a minor extent, it has never had the funds necessary to make complete investigations. Since the war the public demand for cleaner coal has become insistent and the problem of coal storage has come to be

recognized as one of first importance. If, too, a foreign trade in coal be built up, it is necessary to establish abroad confidence in the quality and grading of coal as well as to furnish to exporters much additional data as to technical methods of handling it. At the basis of all this lies correct sampling and grading.

"After conference with the Secretary of Commerce, it is proposed that the two departments shall work together in service to the public on coal, through the office of a coal or fuel commodity chief. The Department of Commerce's interest is along those commercial lines within its province, while the Bureau of Mines will act in its

fact-finding technical capacity, to learn why certain coals will or will not store, what are the engineering problems of coal storage, what kinds of coal the public is receiving, and to what extent it is feasible to establish grades of quality, as well as mining and engineering features it is necessary to improve in order to build up a good name for American coals in the foreign markets. It is believed that with this assistance from the Government the producers can build up pools of real integrity which will lower costs and release railway and marine equipment. The Testing Fuels appropriation is to be decreased by \$6,510, since with these general studies under way the amount previously spent specifically on Government account can be saved."

Experiment Stations Expense—Decrease of \$25,000, for the reason that it is proposed to take the \$25,000 now expended for the Alaska station and combine it with the federal inspection service in Alaska in a consolidated Alaska station, as is explained in the next paragraph.

Alaska Station and Inspection—Total apparent new appropriation asked, \$27,675; actual net new appropriation asked, \$2,675. Under this head the "justification" states:

"At present there is in Alaska under the Bureau a mining experiment station costing \$25,000 yearly, and a Federal Mine Inspection Service costing \$7,325, yearly. It is proposed to consolidate these into one station at Fairbanks, Alaska, and in addition to add the first aid and mine rescue training work now being so successfully carried on by the Bureau of Mines in the

United States. Therefore, for the consolidated station there would be available, by transfer from the appropriations of Expenses, Mining Experiment Station, \$25,000 and from Inspecting Mines in Alaska, \$7,325, total \$32,325. The extra amount asked for, \$2,675, will establish the first aid and mine rescue work, a service recently requested of the Bureau by resolution of the Alaska legislature."

Care of New Buildings and Grounds, Pittsburg—For building storage place for inflammable materials, \$2,000; vault for inflammable motion picture films, \$2,000; for grading and retaining wall, \$1,000.

Enforcement of Oil Leasing Act—The Department estimates that the 2,600 prospecting permits issued will produce a minimum of two new pools within the next year, each of which will require an engineer, gauger, clerk, and automobiles and other supplies, or a total of \$23,000. To supervise work on naval reserves, on one of which the government already received 1,300 barrels royalty daily, for salaries \$7,000.



REP. LOUIS C. CRAMPTON

Of Michigan. Mr. Crampton is chairman of the sub-committee on appropriations for the Interior Department of the House Committee on Appropriations. The other members are Chester W. Taylor of Arkansas, Charles F. Carter of Oklahoma and James F. Byrnes of South Carolina. Another member will be appointed.

BUREAU OF MINES ESTIMATES FOR 1923, AS SUBMITTED TO THE DIRECTOR OF THE BUDGET, AMOUNT ALLOWED, ETC.

	1922	Submitted 1923	Allowed 1923	Amount Disallowed	Increases over 1922—		Decreases from 1922—	
					Asked	Granted	Asked	Granted
General Expenses.....	\$ 76,900	\$ 76,900	\$ 76,900					
Mine Accidents.....	409,065	414,065	414,065		\$ 5,000	\$ 5,000		
Testing Fuel.....	142,510	136,000	136,000				\$6,510	\$ 6,510
Mineral Mining.....	125,000	150,000	130,000	\$ 20,000	25,000	5,000		
Non-Metallies.....	35,000	35,000	35,000					
Petroleum & Natural Gas.....	135,000	195,000	135,000	60,000	60,000			
Oil Shale.....		125,000		125,000	125,000			
Experiment Stations.....	200,000	200,000	175,000	25,000				25,000
Alaskan Station.....	7,325	35,000	35,000		27,675	27,675		
Care New Buildings Pittsburgh.....	50,000	55,000	55,000		5,000	5,000		
Operating Mine Rescue Cars.....	160,000	178,000	178,000		18,000	18,000		
New Mine Rescue Car.....		81,000	81,000		81,000	81,000		
Books and Publications.....	1,500	1,500	1,500					
Oil Leasing Act.....	132,000	173,000	162,000	11,000	41,000	30,000		
Land—Experimental Mine.....		18,000	18,000		18,000	18,000		
Land—Pittsburgh Station.....		28,000	28,000		28,000	28,000		
Totals.....	\$1,474,300	\$1,901,465	\$1,660,465	\$241,000	\$433,675	\$217,675	\$6,510	\$31,510
				Less decrease asked	6,510	31,510	— Less decrease granted	
				Total increase asked	\$427,165	\$186,165	— Total increase granted	
				Less total granted	186,165			
				Disallowed	\$241,000			

Experimental Mine—To purchase land at Bruceton, Penn., where explosives tests are made, to protect the government from damages claims filed by neighbors, \$18,000.

Land for Pittsburgh Station—To purchase land adjoining experiment station, thereby to prevent shutting off of light by a proposed commercial structure, \$28,000.

Column 1 shows the budget for the fiscal year 1922 (the current year) expiring June 30, 1922.

Column 2 shows the estimates submitted by the Interior Department to the Bureau of the Budget. These are the amounts which would have been requested of Congress except for the new budget law.

Column 3, headed "Allowed," shows the amounts allowed by the Bureau of the Budget. These are the estimates which have been sent to Congress with the approval of the Interior Department, the President and the Bureau of the Budget.

Column 4, "amounts disallowed," shows exactly the cuts made by the Bureau of the Budget.

The fifth column shows the increases over the current year which the Bureau of Mines wanted, and the sixth column shows the increased amounts which the Bureau of the Budget allowed to reach Congress.

The last two columns are self-explanatory.

It will be noted that no appropriation has been asked for maintenance and operation of the government fuel yards in Washington, for adjustment and payment of mineral claims and for investigation of lignite coals and peat. These items are cared for in balances remaining from appropriations of previous years.

TABLOID REPORT OF MINES BUREAU AND GEOLOGICAL SURVEY WORK

CONDENSED summaries of the work of the Bureau of Mines and the Geological Survey are contained in the annual report of Secretary of the Interior Albert B. Fall. This summary shows 52 accomplishments of the Bureau of Mines and 52 accomplishments of the Geological Survey. The various problems studied and projects undertaken by these two departments of the government show them to be among the most useful. Secretary Fall's summaries of the work of these two

bureaus, in which the mining industry is particularly interested, and from which the country as a whole is greatly benefited, follow:

BUREAU OF MINES

1. Trained 12,525 miners in rescue and first-aid methods, as compared with 10,177 in the fiscal year 1920.
2. Rendered assistance at 32 mine accidents—31 at coal mines and 1 at a metal mine.
3. Developed scientific systems of classifying export coals into "pools" by systematic sampling and analysis to supersede the arbitrary classifications used in wartime, in co-operation with three of the largest seaboard coal exchanges.
4. Inspected and sampled coal purchased by the United States Government departments, as well as coal for export to Switzerland and the Netherlands.
5. Assisted the Government departments in their fuel problems by technical advice and assistance.
6. Demonstrated proper appliances and ways for saving natural gas in the home.
7. By examination and study of conditions in various oil fields, petroleum engineers of the bureau, through advice and assistance to the operators, saved many thousand dollars' worth of oil and gas that would otherwise have been wasted.
8. Demonstrated that losses occurring from evaporation of crude oil in storage and transit are of great magnitude and can be reduced largely by the application of methods it recommended.
9. Co-operated with the Indian Office in improving operations on oil land owned by Indian tribes.
10. Assisted the Treasury Department in devising improved methods for estimating values of oil properties.
11. Developed improved methods of using mixtures of low-grade mid-western coal and coke rather than high-grade eastern coke alone as fuel in water-gas sets.
12. Developed an improved method of separating water from tar in tar emulsions from water-gas sets.
13. Made further progress in the investigation of methods for preparing and utilizing lignite, which constitutes the greater part of the nation's fuel resources.
14. Determined and reported to the superpower survey that it is not economically feasible to process coal for recovery of by-products at very large power plants.
15. Completed a comprehensive report on recent developments in electric brass melting and electric brass furnaces.

16. Investigated properties of molybdenum and cerium steels.
17. Determined that scrap losses in casting aluminum, amounting to \$1,200,000 yearly, are largely preventable, as are melting losses, aggregating about \$3,000,000 yearly.
18. Prepared a comprehensive bulletin on the manufacture, properties, and uses of aluminum alloys.
19. Investigated methods for preparing caustic magnesia and determined that high-grade magnesia can be made from some varieties of magnesite hitherto believed to be unsuitable for this purpose.
20. Investigated dolomite as a substitute for the more costly magnesite in preparing refractories. Developed methods for concentrating the magnesia content in dolomite by removal of lime content, and obtained from Ohio dolomite a product superior in magnesia content to imported Canadian magnesite.
21. Completed the testing of white clays collected from various deposits throughout the United States, with the result that several clays were found suitable for making china and white pottery.
22. Devised a process for collecting radium emanation from radium salts.
23. Continued testing and experimental work on mining explosives with reference to increased safety and efficiency.
24. Prepared regulations for the operation of coal mines on the public domain under the leasing act.
25. Organized a staff which is supervising effectively the enforcement of leasing regulations on oil and gas lands and on the coal, oil-shale, phosphate, and sodium lands of the public domain.
26. Assisted the Territorial Government of Alaska in revising the mining statutes of that Territory.
27. Investigated fires and explosions at coal mines, with a view to offering recommendations that will make mining safer.
28. Continued to study methods of washing coal in Illinois and Washington, with the result that improvements in recovery and in the quality of the washed coal have been effected in many plants.
29. Continued a study of the industrial use of liquid oxygen explosives, and conducted experiments and tests with this type of explosive.
30. Made definite progress in investigating ventilation in metal mines, as it relates to the health and efficiency of the miners; also in the companion problems of rock dust in metal mines, and the temperature and humidity of mine workings.
31. Completed an investigation, in co-operation with the State of Colorado, of the low-grade ores of Colorado.
32. Continued a study of iron-mining methods in the Lake Superior region and extended this work to the Birmingham district.
33. Co-operated with the State of Utah in preparing coal-mine safety regulations which were adopted and put into effect by the Utah Legislature.
34. In co-operation with the State of Utah and Salt Lake City, effected regulations and improved methods for reducing smoke in the city.
35. Demonstrated that large quantities of oil may be recovered from surface outcrops of oil and tar sands.
36. In a survey of the crude petroleum of the United States, completed and published analyses, made on a comparable basis, of representative samples of crudes from all eastern fields and Rocky Mountain fields, thus affording purchasers a means of comparing different crudes and of judging their relative value.
37. Developed a process for treating gasoline to remove objectionable sulphur compounds, thus making some grades suitable for export that were not available heretofore.
38. In co-operation with the States of Utah and Colorado, investigated American oil shales and methods of refining them, and prepared a bulletin on the subject.
39. Developed a convenient and reliable retort for assaying oil shales for their oil yield.
40. Continued an investigation of the slate-quarrying industry, and brought methods for prevention of waste and utilization of unavoidable waste to the attention of operators.
41. Completed a study of the talc industry, and pointed out improved methods for reducing waste in mining and preparation, and for improving the quality of the product.
42. Rendered advice and assistance to numerous mine operators, mill operators, miners, prospectors, and others on problems connected with the mining, mineral, and metallurgical industries.
43. Studied blast-furnace operations with regard to smelting low-grade manganese ores.
44. Continued on a much larger scale an investigation of the heat treatment of drill steels as related to breakage in use.
45. Developed improved methods for separating sphalerite from fluorspar in ore not amenable to methods ordinarily used in fluorspar mills.
46. Showed zinc-mill operators of the Wisconsin district how to save most of the fine ore that had been going to waste in tailings from the mills.
47. Prepared a bulletin on the volatilization process for recovering metals from low-grade ores carrying lead, silver, zinc, or copper, and tested numerous ores to determine whether the process was suited to them, with the result that a number of operators are erecting volatilization units at their mines.
48. Practically completed the development of a better form of oxygen breathing apparatus, which is much lighter than the present Gibbs apparatus and embodies numerous mechanical improvements.
49. Arranged and conducted a national first-aid meet at Denver, Colo., in which 68 teams and 18 mining States participated; also assisted in numerous State and local meets, which have done much to popularize safety work.
50. Developed a small light gas mask for city firemen; also a pocket mask for protecting railroad locomotive crews from smoke in passing through tunnels.
51. In co-operation with the Public Health Service and the New York and New Jersey State tunnel commissions, completed tests for determining the amount of carbon monoxide given off by motor vehicles and the permissible concentration in tunnels. Continued experimental work on the removal of gases from tunnels.
52. Supervised the work of the Government fuel yard in the District of Columbia, which during the year handled 269,180 tons of coal, 666 cords of wood, 1,426 bushels of charcoal, and 77 tons of coke. This fuel was distributed to a total of about 800 points.

GEOLOGICAL SURVEY

1. Surveyed geologically more than 4,600 square miles in detail, more than 23,000 square miles in reconnaissance surveys (about 1,500 in Alaska), and 18,000 square miles in exploratory surveys.
2. Continued co-operative geologic work with 17 State organizations, with Hawaii, and with Haiti and the Dominican Republic, and co-operated in research with the United States Reclamation Service, Bureau of Mines, Forest Service, Federal Power Commission, and other Government organizations.
3. Made studies of ore deposits in 10 States and prepared or began the preparation of 16 reports on ore deposits or mining districts.
4. Made field surveys and studies in 10 States with a view to determining the occurrence of oil and gas, began the preparation of State maps showing oil and gas fields, and published maps showing the fields in Louisiana and Texas.
5. Continued studies of the structure and oil resources of the Osage Indian Reservation in Oklahoma, prepared maps and reports on them for publication, and made further studies in other areas in that State with a view of directing successful search for oil and gas.
6. Studied deposits of oil shale in Colorado and Nevada and prepared for publication the manuscript of a general report on oil shales in the Rock Mountain region.
7. Made studies of certain coal fields and prepared reports on fields in five States.
8. In a search for beds of potash salts in the Southwest discovered at three localities two or more potash-bearing beds that may prove to be of commercial value.
9. Investigated nitrate-bearing clays in the Mohave Desert and in the valley of Colorado River and adjacent parts of southeastern California and began the preparation of a report on them.
10. Continued studies of mineral deposits in Alaska.
11. Made topographic reconnaissance surveys of 770 square miles on the southern slope of the Alaska Range, in the headwater region

of the Susitna basin, and in the Cook Inlet region, and geologic surveys elsewhere in Alaska of about 1,500 square miles.

12. Continued investigation of the water-power resources of southeastern Alaska.

13. Made collections and examinations of fossils from 21 States for stratigraphic identification or correlation.

14. Made more than 2,500 analyses of rocks, ores, minerals, and waters.

15. Continued observations of temperatures in deep wells to determine temperature gradients in oil-bearing and non oil-bearing areas.

16. Continued the collection of statistics of mineral production and co-operated in this work with other Government organizations, with State organizations, and with industrial associations.

17. Continued studies of foreign mineral resources so far as these may compete with domestic resources or affect domestic industries.

18. Maintained cooperation in topographic surveys with other Government organizations and with 20 States and Hawaii.

19. Mapped 12,311 square miles topographically and resurveyed 1,669 square miles.

20. Ran 4,796 miles of levels and established in connection with them 1,123 permanent bench marks.

21. Made 576 linear miles of river surveys and ran 5,715 miles of road traverse.

22. Occupied 122 triangulation stations, of which 78 were permanently marked, and ran primary-traverse lines aggregating 1,775 miles, setting in connection with them 394 permanent bench marks.

23. Continued compilation of the United States portion of the international map of the world, for which maps of 38 States have now been completed.

24. Published a relief map of the United States, showing the general relative heights of the land and depths of the sea, and began the preparation of relief maps of Ohio, Kentucky, Wyoming, central California, the Black Hills, and the Mississippi Valley.

25. Continued to supervise topographic surveys in the Dominican and Haitian republics, which were performed by topographic engineers of the Survey on furlough.

26. Continued measurements of stream flow throughout the United States and in Alaska and Hawaii, doing part of the work in cooperation with other Federal organizations and with 31 States and Hawaii.

27. Continued analyses and classification of surface waters of the United States.

28. Made ground-water investigations in 10 States and in Hawaii and continued analyses of samples of water.

29. Continued preparations and publication of guides to desert watering places in Arizona and California.

30. Continued investigations of the present and probable future use of surface and ground waters in connection with the classification of public lands.

31. Increased areas in public water reserves by more than 5,600 acres.

32. Increased area designated under the ground-water reclamation act from 57,600 to 726,680 acres.

33. Increased designations of nonirrigable lands by more than 23,500,000 acres.

34. Made field reconnaissance investigations of the surface and ground-water resources of Nevada for the purpose of classifying lands under the ground-water reclamation act.

35. Made field examinations in 11 States of land applied for under the enlarged-homestead and stock-raising homestead laws.

36. Increased designations of stock-raising lands from 74,000,000 to 105,000,000 acres.

37. Made reports on nearly 7,000 applications for oil and gas prospecting permits and reduced the oil and gas reserves by more than 60,000 acres.

38. Made reports on 249 applications for coal-prospecting permits and 78 applications for coal leases and reduced the coal-land reserves by more than 200,000 acres.

39. Defined as leasing territory 24 oil and gas producing "structures" containing more than 230,000 acres.

40. Made more than 7,500 reports on applications under the mineral-leasing laws.

41. Made surveys in five States for the purpose of classifying lands with relation to their value in connection with the development of water power.

42. Made reports increasing the power-site reserves from 2,500,000 acres to more than 3,700,000 acres.

43. Disposed of more than 33,000 cases referred to the survey for the preparation of reports thereon to be used in the administration of the land laws.

44. Prepared statistical reports on the production of electricity and the consumption of fuel by public-utility power plants and continued mapping of transmission lines and power stations.

45. Prepared and published maps showing power stations and transmission lines in Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New Jersey, Delaware, and Maryland and assembled data for similar maps of other States.

46. Conducted an engineering investigation and prepared an exhaustive report on a proposed "superpower system"—a comprehensive system for the generation and distribution of electricity for the operation of railroads and manufacturing industries in the region between Boston and Washington.

47. Through cooperation with other Government scientific bureaus and scientific institutions furloughed members of the geologic staff to make special examinations in the West Indies, Central America, South America, the Philippines, and elsewhere.

48. Issued in the form of mimeograph press bulletins brief descriptions of prospective oil fields with structure contour maps, thus giving publicity to valuable results of field work with the least possible delay.

49. Published 133 reports, containing more than 10,600 pages and reprinted 34 reports.

50. Engraved and printed 60 new topographic maps and engraved 20 new topographic maps, printing in all, of new and reprinted maps, more than 900,000 copies.

51. Printed under contract lithographed maps, charts, etc., for other branches of the Government in editions amounting to about 2,840,000 copies.

52. Distributed through the office of the Superintendent of Documents more than 619,000 books and sent out directly more than 12,000 books and 740,000 maps, of which more than 550,000 were sold.

ALUMINUM EVERYWHERE.—Aluminum is the most abundant of all metals, according to the United States Geological Survey. It is an essential constituent of nearly all rocks except sandstones and limestones. Although it is more abundant than iron, whose uses were known to the ancients, it has been of no practical use until the last twenty-five years, for it is locked up so tightly with oxygen that only the electric furnace can easily and economically separate the two elements and give us the metal for such uses as airplane parts, automobile bodies and cooking utensils.

STATUS OF WAR MINERALS CLAIMS

WAR MINERALS claimants who for any reason are dissatisfied with action heretofore taken on their claims must file petitions for hearing or rehearing on or before February 15. Rules of procedure were announced by Judge E. C. Finney, acting Secretary of the Interior, on December 17. The announcement of these rules follows, in full:

DEPARTMENT OF THE INTERIOR
WASHINGTON

To War Minerals Relief Claimants, and Attorneys Therefor:

There is inclosed herewith a copy of the amendment to the War Minerals Relief Act, which legislation was approved by the President on November 23, 1921, and is now effective. In view of this amendment, please be advised:

Should you conceive that your claim, or any claim properly represented by you, heretofore filed within the time mentioned in the Act, is within the contemplation of the Act as now amended, a motion for re-hearing of the claim will be duly considered, pursuant to the following regulations:

I. *As to Claims Heretofore Passed On.*

1. Such motion for re-hearing must be in writing and must be filed *not later than February 15, 1922*, in the office of the War Minerals Relief Commissioner, Room 2117, Interior Department Building, Washington, D. C. *It must plainly designate the claim and state specifically the grounds upon which re-hearing is asked.*

2. If the claim for which a re-hearing is asked, or any part thereof, has heretofore been rejected on the ground that there was no government request or demand, the written motion must be *duly under oath*, setting forth:

(a) The exact character of the "personal, written, or published request, demand, solicitation or appeal" which stimulated the claimant to produce or prepare to produce the mineral.

(b) The government agency mentioned in the Act from which the request, demand, solicitation or appeal came.

(c) How or by whom the request, demand, solicitation or appeal was communicated to the claimant.

(d) The time and place of such communication.

3. If the claim has been rejected, or partially rejected, on other grounds than the question of stimulation, *the errors complained of should be stated in detail* in the written motion for re-hearing.

II. *As to Claims Heretofore Excluded.*

If the claim is one which was mailed in time but not received in time, so that no action has ever been taken on it, written request for a hearing thereof, *filed in the office aforesaid not later than the date aforesaid*, will be granted as of course, and the claimant should proceed with due diligence to establish the claim by proof before the War Minerals Relief Commissioner.

E. C. FINNEY,
Acting Secretary of the Interior.

A full report of the War Minerals Relief Commission up to and including November 30, 1921, was sent to Congress December 5. This report shows that claims and funds had been disposed of as follows:

Number of claims filed within the time required in the Act.....	1208
Total amount claimed.....	\$18,131,493.40
<i>Awards by Secretary</i>	
Number of claims in which awards were made....	380
Amount claimed.....	\$ 8,291,203.37
Amount allowed.....	3,355,008.37
<i>Disallowances by Secretary</i>	
Number of claims disallowed.....	779
Amount claimed in disallowed claims.....	\$ 8,485,413.34

<i>No action by Secretary</i>	
Number of claims pending.....	49
Amount claimed.....	\$ 1,354,676.90
Appropriation.....	\$ 8,500,000.00
Administration Expense to Nov. 30, 1921.....	\$ 305,353.66
Claims awarded.....	3,355,008.37 3,660,362.03
Balance available.....	\$ 4,839,637.97

Note: In previous reports of the Commission the number of claims filed was given as 1203. This did not include five claims properly filed, duplicating other claims.

Miscellaneous Data

Amount deducted from salaries and covered into the Treasury under the provisions of the Civil Service Retirement Act.....	\$ 1,529.10
Deductions from awards made by Secretary to pay money due United States Government:	
To U. S. Railroad Administration.....	\$29,213.27
Department of Agriculture.....	1,043.39
Internal Revenue.....	330.92
Total.....	\$30,587.58

Of the 380 awards there were	
Accepted.....	178
Accepted with provisional comment by claimant....	35
Not accepted.....	.....
Not cashed.....	2
No comment.....	165

Claims reconsidered and in which additional awards were made:	
Hyner & Rufener No. 133—1st award.....	\$ 752.19
additional award.....	1,288.22
A. H. Jarman No. 771—1st award.....	\$70,288.45
additional award.....	1,317.57
Samuel Dolbear No. 410—1st award.....	\$10,995.15
additional award.....	2,845.37

Note: None of the added awards have passed the General Accounting Office, Interior Department Division, because of ruling of the Comptroller of the Treasury in the Dolbear claim.

The report contains the following review of work under the old law and partial analysis of the new law:

"In the administration of the Act by a former Secretary of the Interior, an opinion was obtained from the Attorney General which at once put beyond the benefits of the Act practically one-half of the claims which had been filed. That official interpreted Government "request or demand" as specified in the Act, to mean that the claimant must have been asked specifically by either the Department of the Interior, the War Industries Board, the War Trade Board, the Shipping Board, or the Emergency Fleet Corporation, to produce or prepare to produce one or more of the minerals named in the Act. Acting upon the theory that personal contact with a Government agency was required, there were rejected 610 claims, in which Government stimulation was claimed, but direct Government contact, as set out in the opinion, not established.

"A ruling by the Comptroller of the Treasury was to the effect that once the Secretary of the Interior made an award the act was final, and no additional award could be made. This prevented the correction of manifest errors in calculations, and certain claimants were denied amounts to which admittedly they were entitled.

"By another ruling by the Comptroller of the Treasury, claims could not be considered which were not in the hands of the Secretary of the Interior within the time stated in the Act. There were 51 claimants who deposited their claims in the mails within the time prescribed by the Act and which claims were classed as "delinquent" because they were delivered to the Secretary of the Interior a few

days or hours subsequent to the time limit. Because of the rulings aforesaid, it was impossible to satisfy a great majority of the claimants that full and fair consideration had been accorded them; and so earnest and persistent were the protests against the restrictions that to close the work authorized and directed by the Act in the face of those protests undoubtedly was to send to Congress, later, a flood of private claims, notwithstanding, members of Congress, in the passage of the law originally, had reason to believe that through its operation, private claims of this character would be prevented.

"Congress, therefore, was asked to amend the original Act so as to give every claimant his "day in court" and to permit a fair and reasonable adjudication of every claim. To that end Senate Bill 843 was passed and on November 23, 1921, received the approval of the President. It broadens the scope of Government stimulation, provides that claims deposited in the mails within the time prescribed in the Act shall be considered as filed, and permits the correction of errors due to 'miscalculation'."

PUBLIC LANDS RAPIDLY BECOMING PRODUCTIVE AREAS

"ONE MORE CHAPTER in our story of nation building, with home and fireside as the initial unit," is the description given by the Interior Department of the annual report of the commissioner of the General Land Office. The report shows that the last fiscal year was an especially busy one on account of the increased interest in mining claims under the Federal Leasing Law of February 25, 1920. The activities during the year under this act show, in part, that 111 prospecting permits for potash were issued, and 12 applications for patent of such lands based on discovery allowed; while one potash lease was issued for some 2,000 acres of land in Searles Lake, California. Fifty-five applications for coal prospecting permits, 4 leases and 4 licenses, covering in all 87,781 acres, were awarded, and three leases for coal mining in Alaska, covering 4,520 acres.

Eleven thousand and fifty-five applications for oil and gas prospecting permits under sections 13 and 20 of the mineral leasing act have been received since the passage of the act, and during the last fiscal year 3,256 permits were granted.

The total amount of royalty paid for past production under leases issued under section 14 of the leasing act is \$6,346.70; while the total bonus paid for leases sold under section 17 of the act is \$1,040,610.50. In addition, the commissioner calls attention to one sale of leases at public auction under section 17, for 41 tracts of 160 acres, more or less, in Wyoming, where the total amount of bonus paid for the 41 tracts was \$1,687,000.

During the fiscal year 1921 there were entered and allowed original entries covering an area of 15,631,630 acres, exclusive of an area of 315,915 acres included in final entries under special provisions for their disposition, and during that same period of time there were patented 10,117,809 acres, of which area 8,172,802 acres were under the homestead laws; all of which gives a vivid illustration of the rapidity with which our public lands are passing into private ownership, and assuming the burdens of taxation incident thereto.

During the year 52,785 patents were issued by the Recorder of the General Land Office. These patents covered 10,117,809 acres. There were furnished during the same period 81,924 pages of certified copies of records.

TAX COMMITTEES

THE standing tax committee of the American Mining Congress has been increased from seven to nine members. All of its members are well known to the mining industry. The members of the 1921 committee have been reappointed for 1922, as follows: Paul Armitage, New York City, Chairman; George E. Holmes, New York City, Vice-Chairman; R. C. Allen, Cleveland, Ohio; A. Scott Thompson, Miami, Okla.; A. P. Ramstedt, Wallace, Idaho; E. L. Doheny, Los Angeles, Calif.; John C. Howard, Salt Lake City, Utah. The two new members are Wm. B. Gower, New York City, and J. C. Dick, Salt Lake City. Both Mr. Gower and Mr. Dick are authorities in matters of federal and state taxation. Mr. Gower is a member of the American Institute of Accountants. Mr. Dick was formerly Chief of the Natural Resources Division of the Income Tax Unit, Bureau of Internal Revenue. Both have contributed to the success of past tax conferences held in conjunction with the Mining Congress annual conventions, and have given active support to the work of securing desirable changes in methods of procedure in the administration of the tax laws which would simplify, expedite, and equalize the burden. The committee this year will actively co-operate with the Federal Tax Simplification Board, created by the new law, in the consideration of the revision of forms, regulations, and rules of practice of the Bureau of Internal Revenue, and will collaborate with the Special Joint Tax Committee of the American Mining Congress, authorized by resolution at the last convention to investigate state tax laws. The membership of the latter committee will be announced in the February issue of the Journal.

TAX SIMPLIFICATION BOARD

THE TREASURY DEPARTMENT has appointed the following board to investigate procedure and forms in the administration of the revenue laws and to recommend simplification thereof: James H. Beal, of Reed, Smith, Shaw and Beal, Pittsburgh; Joseph E. Sterrett of Price and Waterhouse, New York; Wm. T. Abbott, Central Trust Co. of Illinois, Chicago; Asst. Revenue Commissioner C. P. Smith; Jesse D. Burks, assistant to deputy commissioner, and George W. Skilton, assistant to supervisor of collectors' offices.

GOLD AND SILVER IMPORTS AND EXPORTS FOR ELEVEN MONTHS

DEPARTMENT of commerce calculations of exports and imports of gold and silver for the first eleven months of 1921 show the following:

	11 months ended Nov.		Increase (+) Decrease (-)
	1921	1920	
	Dollars	Dollars	Dollars
GOLD			
Imports.....	660,242,112	372,407,785	+287,834,327
Exports.....	21,729,795	305,032,921	-283,303,126
Excess of imports.	638,512,317	67,374,864	.....
Excess of exports..	.....	.....	.....
SILVER			
Imports.....	57,726,767	83,434,399	-25,707,632
Exports.....	44,430,352	107,535,304	-63,104,952
Excess of imports.	13,296,415	.....	.....
Excess of exports..	.....	24,100,905	.....

CENTRALIZED GOVERNMENT AND BETTER ROADS NEEDED IN ALASKA

CENTRALIZATION of governmental administration at Juneau, the capital, is urgently recommended by the governor of Alaska in his annual report to the Secretary of the Interior. The suggestion is made that after the proposed consolidation of bureaus under one departmental head, one representative of each essential bureau be stationed at Juneau and given authority to act upon all matters not affecting public policy.

"Liberalized laws and more flexible laws and regulations thereunder, with concentration of authority and responsibility and an administration co-ordinated and brought closer home," is specifically recommended. "Capital and people are required to develop the resources of the territory, and until it is made easier for these two necessary factors to obtain a foothold the territory will not progress. The difficulties of the administration are great owing to distance and inadequate transportation and mail facilities. Under the present long range system of government individual initiative has been halted and the pioneer spirit maimed."

Above is from the summary of the governor's report as announced by the Department of the Interior.

The governor reports that the territory has not progressed or prospered during the last fiscal year, or, as a matter of fact, since the conclusion of the world war, as it has felt seriously the effects of abnormal conditions prevailing everywhere. "Our mining enterprises have either curtailed operations or shut down altogether, both quartz and placer mining being sufferers."

Improved transportation facilities are recognized as prerequisites to the territory's development. "Roads and roads and still more roads all through the territory, must, therefore, constitute a major part of Alaska's development," the governor says.

The wisdom of operating vessels of the United States Shipping Board in Alaskan waters is, however, regarded by the governor as a questionable expediency. The point is made that such operation might put privately owned lines out of commission, since the tonnage is not large, and that in such eventuality the situation might easily be made even worse than it is.

The governor makes the further statement that "unless Congress is ready to sanction and embark upon a policy of unlimited paternalism for Alaska and prepare to pay the bills, the government may as well keep out of the steamship business, at least until private capital and individual enterprise have demonstrated conclusively their inability under proper regulation and control to give the rates and service which Alaska requires in order to prosper." The governor believes, however, that the use of Shipping Board vessels should be authorized in the President's discretion to meet Alaska's need as an alternative.

The commission has drawn up a ten-year program for systematic road development, having in mind particularly the construction of a system of feeders to the government railroad. This work has started, an appropriation of \$425,000 having been made for the fiscal year 1922. It is recommended that \$1,200,000 be expended during the fiscal year 1923. The whole program calls for the expenditure of \$10,000,000 during ten years.

The governor's report on Alaskan mining for the year follows:

"In view of the present condition of extreme stagnation in all the mining regions of the states and the demoralized condition of the

entire metal market, the Alaska mining industry appears to be in a very healthy condition. The fact that the mineral output of Alaska for the year 1920 shows a substantial increase over that of 1919—12½ percent.—and represents a normal growth when compared with the average annual production for the past decade is very encouraging.

"More prospecting for lode deposits was done during the past year than for many years prior, and this work has been rewarded by several important discoveries, particularly of gold lodes. At least three of these newly found properties give promise of becoming producing mines in the near future. In spite of the continued high cost of transportation, equipment, supplies and labor, active development work has been continued on promising properties in every important mining district of the territory.

"The metallic minerals produced in Alaska during 1920 include gold, copper, silver, lead, tin, quicksilver, platinum and palladium. The non-metallic minerals produced were coal, petroleum, marble and gypsum.

"A co-operative agreement was entered into between the Navy Department and the Department of the Interior near the close of the last fiscal year and an extensive program of building, prospecting, and development work has been carried on in the Chickaloon coal field under the navy appropriation. No coal has been shipped as yet for the use of the navy, but a small quantity has been accumulated, and plans are being extended for the taking out of coal in considerably greater quantities when the coal washing plant is ready to treat the coal for use of the navy. The output for the fiscal year amounted to 47,600 short tons. At the end of the fiscal year there were 409 men on the payrolls at these three mines; however, only about 250 were engaged in the actual work of mining, the remainder being engaged in construction work and investigations.

"In the Nenana coal fields the year witnessed the abandonment of the coal measures which had previously been developed near Mile 363 on the railroad and on the west side of Nenana River, for better showings directly under the tract of Mile 358. The Healy River Coal Corporation secured a lease in this vicinity and has spent a great deal of money in prospecting and developing, installing machinery, constructing buildings, etc. They have developed a quantity of lignite coal which far surpasses anything yet produced in that section of the county, and have disposed of a considerable amount to the railroad for construction and operation purposes on the Northern Divisions, and to commercial users in Nenana and Fairbanks. During the fiscal year, 9,450 long tons of lignite were mined. The cost of lignite for domestic purposes delivered in Fairbanks, was \$9.50 to \$10.00 per ton in small lots, but under contract involving one hundred tons or more a price of \$9.00 was made.

"Lignite coal mining was also done on a small scale in the Cook Inlet region and in other parts of Alaska, and a coal land lease was granted in the Cook Inlet field. The Alaska coal production for 1920 is about 61,000 tons; that of 1919 was 60,574 tons.

"There has been great activity in prospecting for oil during the fiscal year, particularly in the Cold Bay field. Since the passage of the act of February 25, 1920, 494 applications have been filed, covering 1,100,553 acres. At the close of the fiscal year, however, the only producing wells were those of the Chilkat Oil Company, which, as heretofore, has continued the production and refining of petroleum in the Katalla field, the daily output being about 40 barrels.

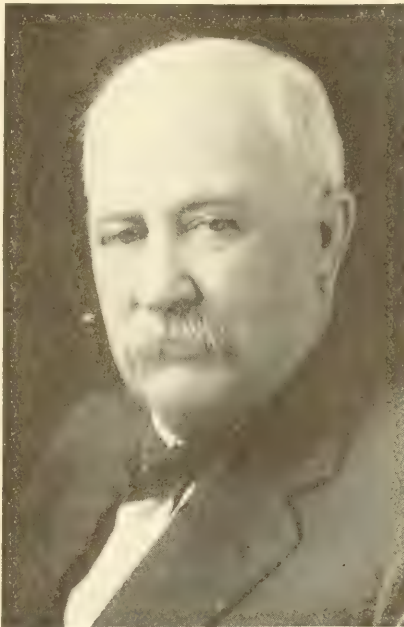
"Drilling on leased ground has been attempted only in the Anchorage district. After a depth of about 200 feet was reached, drilling was stopped owing to the onset of cold weather. Machinery and supplies were landed on the shores of the Alaska Peninsula and will be transported into the Cold Bay district during the winter. It is expected that drilling will be started in May of 1922."

The Thread of the Fabric

II. Representative Joseph Warren Fordney

A Series of Scrutinies Directed Toward Notable Legislative Personalities

By IRA L. SMITH



JOSEPH WARREN FORDNEY

JOSEPH WARREN FORDNEY, chairman of the powerful Ways and Means Committee of the House of Representatives, finds room in a prominent spot of the public mind mainly because of the manner in which he is doing his share to keep the fire sizzling beneath an argument that has been brewing for four hundred years. "Joe" Fordney, as he is called to his back, is an ardent follower of the doctrine plastered down by John Stuart Mill, a trail-blazing economist who used to rave all over England in the sixteenth century. John took exception to what Adam Smith, also a chap with a head for figures, said about Lizzie Fair, known in those days as "laissez faire," which means "free trade" when translated into our lingo. This fellow Mill used to rise up on his hind legs at frequent intervals to tell the whole wide world and all points south that protective tariff was the choice cut in the administrative butcher shop of nations.

That's how come this argument that claims Mr. Fordney, Michigan's outstanding legislative product of the present cycle of careers, as a participant at this late date when the blatant gents who started it have been pushing up daisies these many years. Small wonder that Mr. Fordney feels that he is achieving his pet ambition when he finds p'ace as a framer of the tariff measure which this protective regime will deposit in the country's pocket.

Like Senator Penrose, with whom he shares the new tariff's authorship, the gentleman from Michigan looks, with scrambled tolerance and pity, upon those who are tied to the apron strings of other political faiths. Taking his eyes off of the tariff situation long enough to grab an alliteration by the neck for sake of effectiveness, he declares that Democrats are either demagogues or deluded. It is rather surprising to see such battlements tossed up on the political horizon by a man whose ingrown geniality might have caused him to be mistaken for a traveling salesman many a time in days gone by.

A needle in a hay-stack stands out like a boat house in a fog when compared to a tangible flaw in the fabric of Mr. Fordney's character. There is one trait, however, which, while it can hardly in fairness be tagged a flaw, seems askew in a political mind. It is the tendency to supplant mellowed words of diplomacy with frankness. Perhaps, though, it is this trait, all hooked up with an uncanny ability to stow away figures in his mind, that has pushed him up to the plane of prominence he holds.

Though he rarely gets his feet off the ground when it comes to soaring to oratorical heights, he can spin off facts and figures from now until all the prodigal sons in eight states come home. Whatever he lacks in ability to hang words together in a decorative way, he more than makes up by massing regiment after regiment of tariff details on the end of his tongue and sending them out on parade before a host of ears.

Were it not for the fact that Mr. Cannon of black cigar and czarship fame, annexed the monicker of "Uncle Joe" back in the dim ages, Mr. Fordney would probably have had that label tacked on him long ago. As it is, he is more in line to be dubbed "Papa Fordney," partially because of the kindly traits which he possesses in plentitude and also in keeping with his wholly unofficial life.

Where some other Congressman might lead off a speech by stating "I represent the greatest gum drop producing district in the country," Mr. Fordney would be more likely to tell his listeners that he is the "proud father of ten children and twenty-two grandchildren."

The most phenomenal leap from the farm to fame ever made by a character in Horatio Alger's books, which make bank presidents out of plow boys overnight, hardly outdoes the yarn furnished by Joe Fordney's self-manufactured career. Perhaps it is because of the long up-hill pull that the outward coat of brusque efficiency is just a thin covering for a character that's simply soused in the qualities one is apt to find more frequently outside the legislative halls.

HOLMES SAFETY ASSOCIATION TO ENLIST MINE WORKMEN

PRELIMINARY PLANS have been made whereby local chapters of the Joseph A. Holmes Safety Association will give mine workmen direct and personal interest in a national organization devoted to their safety, and the actual organization work will soon be under way.

Details of the manner in which the first aid and mine safety work already done by the Bureau of Mines may be capitalized and continued in effect were discussed at a meeting of the special committee appointed following the annual convention of the association in St. Louis. These details form the basis upon which the general policy governing organization of the chapters is to be formulated.

Members of the committee who attended its initial meeting, held December 8, in Washington, were: F. J. Bailey, assistant to the director of the Bureau of Mines, chairman; J. F. Callbreath, secretary, American Mining Congress; J. W. Reed, director of safety, Consolidation Coal Company; with W. J. James, United Mine Workers of America, represented by proxy. In consultation with the committee were W. D. Ryan, mine safety commissioner of the Bureau of Mines, and D. J. Parker, chief of the bureau's division of mine rescue service. E. H. Denny, of the bureau's staff, is secretary to the committee.

Safety organization already existing in approximately 100 camps throughout the country will form the nucleus around which the local chapter organization will begin its activity. The Bureau of Mines has established 85 of these organizations, while the remainder have been initiated through the efforts of the operators or miners themselves. It is the confident expectation of members of the committee that the end of the first year of organization work will see several hundred local chapters in operation. At that time, determination will be made as to the future extent of the work.

Secretary Denny will present a tentative constitution for local chapters at the next meeting of the committee. In order that operators and miners may meet on common grounds, this constitution will specifically limit the range of matters to be discussed by the local chapters to those which deal directly with safety matters.

One of the strong points held by local chapter organization, according to the unanimous opinion of those who have made a close study of the proposed plan, is the psychological benefits which will be afforded the miner and which will insure that, through constant contact with safety problems and methods, he will not lose any portion of the instruction which had already been afforded him through the first aid and mine safety work already accomplished by the Bureau of Mines through its extensive safety organization.

WOODBURN ON RESCUE COMMITTEE

FOLLOWING the holding of the mine rescue standardization conference in St. Louis, Orr Woodburn, director of the Globe-Miami district mine rescue and first aid station, has been appointed a member of the committee on standardization of rescue methods for metal mines. The appointment was made by George S. Rice, Washington, chief mining engineer of the Bureau of Mines.

Although not in attendance at the St. Louis conference, Mr. Woodburn was the author of one of the most important papers read there. The paper treated rescue methods in use in western copper mines. Mr. Woodburn urged standardization of fire hose equipment and methods, also unified methods as applied to the use of fire doors, cement

guns, fire extinguishers, signal systems and other equipment used in rescue work. The St. Louis conference adopted a resolution favoring standardization of mine rescue methods and equipment.

PETROLEUM STATISTICS, FIRST TEN MONTHS OF 1921

PRODUCTION of petroleum during the first ten months of 1921, Geological Survey reports, was approximately 25,000,000 barrels greater than during the parallel period of 1920, and the daily average was approximately 84,000 barrels greater. Production for the first ten months of 1921 was 390,229,000 barrels and the daily average 1,283,648 barrels, as compared with a total of 365,742,000 barrels and a daily average of 1,199,154 barrels during the same period of last year.

Imports during the first ten months of 1921, amounted to 98,389,809 barrels, of which all but 46,084 barrels came from Mexico. Exports totaled 7,477,402 barrels. The excess of imports over exports was 90,912,407 barrels. Imports during the same period of 1920 aggregated 79,579,609 barrels and exports to 6,720,425 barrels, the excess of imports over exports being 72,859,184 barrels.

The condensed summary for 1921 follows:

PETROLEUM SUMMARY, FIRST TEN MONTHS OF 1921

Month	Domestic production		Imports	Exports
	Thousands of barrels	Estimated value at wells	(Thousands of barrels)	(Thousands of barrels)
1921, Jan.....	37,853	\$111,000,000	13,193	736
Feb.....	35,348	68,100,000	11,384	769
Mar.....	40,965	72,800,000	12,303	728
Apr.....	40,061	70,900,000	10,044	743
May.....	42,043	66,200,000	9,147	865
June.....	40,412	52,300,000	10,205	586
July.....	40,328	45,400,000	8,047	533
Aug.....	40,966	43,900,000	3,352	884
Sept.....	36,615	39,600,000	9,139	881
Oct.....	35,638	51,551,000	11,576	747
1920, Oct.....	39,592	123,800,000	11,361	749

NORTHWEST CONVENTION.—Announcement has been made by F. C. Bailey, secretary, that the annual convention of the Northwest Mining Association will be held February 14-18. After the date had been decided upon, Mr. Bailey said: "As we believe this next year will be a great year for mining, we want to try and have a big convention."

MINT COINAGE. The director of the mint reports the following coinage at mints in November: 90,000 gold double eagles, valued at \$1,800,000. 12,739,000 silver dollars; 735,000 nickels; 868,000 pennies; 1,960,000 Indo-China silver piasters. About 83,000,000 ounces of silver have been purchased and 84,917,000 silver dollars coined under the Pitman Law.

GEOLOGICAL SURVEY

THE WORK of the Geological Survey for last year included detailed geologic surveys of 4,600 square miles, reconnaissance geologic surveys of 21,500 square miles, exploratory geologic surveys of 18,000 square miles, co-operative geologic work with 17 state organizations, studies of ore deposits in 10 states, oil and gas surveys in 10 states, geologic surveys in Alaska of 1,500 square miles, and the continuation of studies of mineral deposits in Alaska.



RAILROAD EXECUTIVES OPPOSE GENERAL RATE REDUCTIONS

By C. H. FARRELL

JUDGING from the testimony so far offered before the Interstate Commerce Commission in its general inquiry, which has just gotten under way, there will be no general reduction in rates outside of the ten percent proposed on numerous agricultural products if the carriers have their way. Without exception the witnesses, after placing before the commission detailed exhibits of the financial situation of the carriers, have concluded with statements to the effect that no further reductions can be granted without disastrous results to the carriers.

In opening the hearing Commissioner Hall, who is acting as chairman of the committee conducting the hearing, which consists also of Commissioners Aitchison, Esch and Lewis, stated that the purpose of the inquiry is to get before the commission all possible facts having any bearing upon the present rate-situation in this country and that the commission desires to get such facts as promptly as possible in order that the unrest which develops from frequent rumors of rate reductions can be definitely and finally put aside. The first witness to be called by the executives was Howard Elliott, chairman of the board of the Northern Pacific Railway Company, who made a general statement as to the attitude of all the carriers toward this hearing. He stated that the owners and managers of the railroads are glad of the opportunity to put before the commission all of the facts in their possession, that they desire to co-operate with agriculture, industry and labor, so as to bring about better economic conditions; but that the carriers believe too much weight is being given to the effect of the freight rates upon business in general. Mr. Elliott expressed the opinion that reductions below the limit of adequacy may do the country more harm than good, because there was practically no inflation in the transportation business during the war and therefore there is very little opportunity for deflation at this time. He also took occasion to defend the transportation act, and

expressed the view that this law had not had a fair trial because of abnormal conditions existing ever since its passage.

"While some rates may be too high," Mr. Elliott said, "the general level approved by the commission about fifteen months ago, with the numerous adjustments made since, is not too high considering what the railroads must pay for wages, fuel and supplies generally, and the increase in this country because of changed conditions has not been nearly as great as in other countries." He stressed the desire of the carriers to make rates as low as they can because they desire the widest distribution of products, but because of the responsibility placed upon the executives by the owners of railroad property they realize their paramount duty of maintaining a safe and adequate transportation machine which must be managed honestly, efficiently and economically. As to economic conditions, the carriers are fully cognizant of conditions now confronting the world and appreciate that the principles laid down by the transportation act cannot be carried out to an exact arithmetical conclusion, but it is the opinion of Mr. Elliott that a sweeping reduction in rates would not at this time increase business because there are many other things which must be settled before there can be a complete revival of industry. He concluded with the statement that the wage question is one of great importance to the carriers and suggested that a sound policy for the labor unions would be an admission that deflation and lower wage scales must come on the railroads, in the mines and in the building trades, all of which would mean greater employment of men and a lower unit of price on many articles that are used by all, thus reducing the cost of living and helping to break the present endless chain of expense.

Following Mr. Elliott's general statement the carriers called to the witness stand George M. Shriver, vice-president of the Baltimore & Ohio Railroad, who filed an extensive statistical statement showing the condition of the

carriers during the last few years. His testimony was given to show that during the twelve months ended with September 30, 1921, the large railroads known as Class I had earned a return of 2.75 percent on their property investment, with the result that some carriers have been compelled to suspend and others to reduce their customary dividends, while still others have maintained these dividends only by drawing upon the surplus earned in previous years, which he believes to be an improper policy. Taking the operating results of this year and re-stating them to reflect the effect of lowered rates and lowered costs to do over again the business of 1921, Mr. Shriver estimated that there would be a net operating income which would afford a return of about 5.4 percent, but these results would not include many important items of maintenance which were deferred during the year. He emphasized the necessity of extensive work on the railroad properties, and particularly the equipment, if the carriers are to be ready for future commercial and industrial expansion. His whole testimony led up to a statement of his belief that at the present time the carriers cannot afford to experiment by reducing rates because it is of prime importance that the country have a strong and effective transportation system. He echoed the belief expressed by Mr. Elliott in his opening statement that experiments in rates should not be made unless and until the processes now operating toward a pre-war level of costs have been more completely realized.

T. C. Powell, vice-president of the Erie Railroad, again emphasized the contention of the carriers that freight rates are not responsible for the depression in business and that a general reduction would not restore business. World-wide conditions are responsible for the present depression, in his opinion, and if the United States could stand by itself we would be in a prosperous condition, according to Mr. Powell's view. Conditions at the present time differ materially

from those in evidence during any other business depression, because the disturbances heretofore have been localized and restricted in their effects and have produced low relative production, which normally would make for high prices but in this particular instance has made for low prices because of the lack of purchasing power and not because of the freight rates, which he believes have had practically no effect. In conclusion he appealed to the commission for as prompt a decision in this inquiry as is possible because rumors of prospective reductions, even though not justified, have had an immediate and paralyzing effect upon many business transactions and the carriers have, in the past, been obliged to announce, from time to time, that rumored reductions would not be made because traffic was being held and buying stopped in the belief that reductions were imminent.

Benjamin Campbell, vice-president of the New Haven Railroad, speaking for the New England lines, testified that present rates are not unreasonable in the aggregate when based on the return to the carriers, and that they fall far short of yielding a considerable part of a fair return upon the value of the property devoted to the public use. He also stated that the New England lines have made many reductions in the past year without stimulating traffic. He read from a letter written by Gerrit Fort, vice-president of the Boston & Maine Railroad, in which that gentleman asserted that depression in business conditions is due largely to causes which have no connection with railroad rates, and that while the present high level of rates may in some instances operate to curtail traffic, railroad rates are but one factor, and a relatively unimportant one, in the lack of a market for commodities which New England produces.

W. C. Maxwell, vice-president of the Wabash Railroad, speaking for the Central Freight Association lines, stated that the carriers have already made thousands of reductions and that there is hardly a commodity which has not been touched; also that the proposed 10 percent reduction on agricultural products would reduce the revenues of the Wabash Railroad by about 2.55 percent of its gross, computed on the basis of traffic in 1921, while the New York Central would lose about 1.5 percent of its gross freight earnings. Similar results were outlined for other carriers in Central Freight Association territory. He concluded with the statement that in his opinion the carriers in Central Freight Association and Eastern territory are not in a position to stand the 10 percent reduction in agricultural products which they have voluntarily assumed, to say nothing of any subsequent reductions.

The Southern carriers were represented by George W. Lamb, who filed an exhibit showing that the railroads in his district for the year ended September 30, 1921, had had a net operating income which produced an annual rate of 1.8 percent on their property investment, which did not permit them to pay the interest on their bonds. During the ten

months ended with October 31st of this year he stated that the Southern roads had fallen short, \$66,135,000 of earning 6 percent on their tentative valuation fixed by the commission for rate-making purposes. His conclusion was that from an accounting standpoint the existing rate structure is not unreasonable, in that it does not enable the carriers to earn a fair return upon the money invested.

The Western carriers were represented by their statistician, Mr. Wettling, who filed an exhibit similar to those put in for the Eastern and Southern lines, which shows that the carriers earned during the year ended September 30, 1921, 3.04 percent on a property investment of \$8,904,233,707. He also showed that the ratio between operating revenues and expenses was 81.49, a decrease from 89.12 last year but still higher than in any other previous year. Mr. Edward Chambers, vice-president of the Santa Fe Railroad, followed Mr. Wettling and stated that the carriers in Western territory are not in a position to make any reductions in their rates, not even those which they have already voluntarily offered to make on agricultural products.

The carriers have put in all of their testimony for the present and the hearing has been adjourned until January 9, when the balance of the railroad case will be put before the commission, followed by cross-examination of the railroad officials who have testified. Shippers and others interested will then be allowed to put in such testimony as they desire regarding specific commodities in which they are interested. This will be followed by the statistical exhibits of a general nature offered by the shippers in reply to the evidence of the railroads. Then will come the general summing up of both sides in the nature of arguments, and the whole matter should be in the hands of the commission for final decision about February 1.

The hearing is being conducted by the four commissioners referred to above, but the various other members of the commission are spending such time on the bench as their other engagements permit, and the entire case will, of course, be discussed and decided by the full commission. In addition to the committee of commissioners hearing the testimony, the chief examiner, the director of traffic and the statistician of the commission, together with their staffs, have been in attendance, and it is understood that the evidence is being abstracted and put in shape for each of the commissioners daily.

PITTSBURGH BASE SUIT

THE COMPLAINT of the Federal Trade Commission in the Pittsburgh steel-basis case has been amended to make its charges more specific, and to simplify the issue and expedite the hearings. The issue in the amended complaint is the same as that contained in the original complaint. The original complaint charges the corporation and its subsidiaries with discriminating in price between the purchasers of its rolled

steel products. The amended complaint makes precisely the same charges with respect to each particular rolled steel product.

MINING EXPOSITION MOVIES TO GO "ON THE ROAD"

TWO motion picture films of mining subjects which were first shown at the National Exposition of Mines, which was a part of the twenty-fourth annual convention of the American Mining Congress, will be used for educational purposes by the Bureau of Mines, under whose auspices they were produced. One is entitled, "The Story of Heavy Excavating Machinery," and one, "Mexico and Its Oil."

The former, produced by the Bucyrus Company, depicts steam, gasoline and other heavy excavating apparatus, and illustrates the iron mines of Michigan, the quarries of New England, coal stripping operations in Ohio and drag-line and tower work done in the interests of conservation along the Mississippi River.

The latter, produced by the Sinclair Consolidated Oil Corporation, illustrates the technical operations of petroleum production and gives a good insight into Mexican life.

Applications for the loan of the films should be made to the U. S. Bureau of Mines, Pittsburgh.

CARNEGIE TECH EXTENDS COAL RESEARCH WORK

AT A DINNER given recently at the U. S. Bureau of Mines, Pittsburgh, Dr. Arthur A. Hamerschlag, president of the Carnegie Institute of Technology, stated that the scientific work being done by the institute and the bureau under a co-operative agreement was worth more to the two institutions than an additional endowment of \$3,000,000 would be to the university. The occasion was a fellowship affair for the university and the bureau.

The institute recently announced four fellowships in coal mining studies, the work to be carried on in co-operation both with the Bureau of Mines and the mining industry of western Pennsylvania. The fellowships, with the instructors, are: acid resisting materials suitable for use in coal mines, by George Enos, under supervision of W. A. Selvig of the Bureau of Mines; microscopic study of the Freeport coalbed, by A. S. Voorhees, under direction of Dr. Reinhart Thiessen of the Bureau of Mines; the relative tendency of various Pennsylvania coals to fire spontaneously, by F. S. Byrne, under direction of Joseph S. Davis of the Bureau of Mines; and the study of gas, oil and by-products from bone and cannel constituents from the Freeport coal bed, by H. G. Berger, also under direction of Mr. Davis.

OIL AND MINERALS IN NEW NATIONAL FOREST

IN ANNOUNCING the creation of a new national forest on the headwaters of the Allegheny River in Pennsylvania, with headquarters at Warren, the Department of Agriculture has announced that minerals and oil are not sought by the government. The department states that federal ownership of the surface will enhance the value of oil and gas holdings, not only because the land will be protected from fire, but also because timber will be grown locally for development of these underground resources. The use of the surface for building sites and rod and pipe lines needed by the oil and gas industries can be secured from the government.

LITHOPONE PRODUCTION COSTS

THE United States Tariff Commission has issued a report showing costs of production in the lithopone industry for the first six months of 1921. The investigation was undertaken in order that information, later than that compiled by the Commission for 1919, might be available to committees of Congress during the pending revision of the tariff.

The total cost, including sales expenses, for the first six months of 1921 was found to be 6.26 cents per pound, and increase of 0.24 of a cent, or 4 percent, over the average cost for 1919. This increase is accounted for largely by the increase in factory overhead expense per pound of lithopone, which more than offset the decrease of 0.26 of a cent per pound in direct labor and a slight decrease in selling expense. Material cost showed a small increase over that in 1919. The total cost of producing lithopone was distributed as follows: 42 percent for raw materials, 13 percent for direct labor, 41 percent for factory overhead, and about 4 percent for sales expense. Variations in cost by companies and the details of material cost and factory overhead are also shown.

The total quantity of lithopone produced during the first half of 1921 was slightly more than 45,000,000 pounds, about one-half the output during the last half of 1919.

The report shows that on an average 1.22 pounds of barytes ore and 0.207 of a pound of metallic zinc were consumed for every pound of lithopone produced. The average cost of barytes ore was \$14.93 per short ton, an increase of 10 percent over the cost in 1919. This increase is largely, if not wholly, due to the increase in freight rates from barytes mines to lithopone plants.

The average net price received for lithopone during this period was 6.76 cents per pound. The difference between total net receipts and total cost shows that the industry as a whole apparently made a profit of one-half cent per pound of lithopone sold. Costs by companies, however, show that three out of the eight firms lost on their lithopone sales during the period.

CONCLUSIONS REACHED IN SHALE INVESTIGATIONS.

THE Bureau of Mines has issued a partial report on shale oil researches carried on at Boulder, Col., of which the following is an excerpt:

At the Boulder, Colo., field office of the Bureau of Mines, in the course of the oil shale investigations, runs have been made with a large horizontal retort in which the highest yields and the best oils thus far produced were obtained. Changes in the retort have made its control much more effective than in the past. Recent work apparently indicates that oil yielded by a horizontal retort is not of as high quality as that from retorts of the vertical type.

Experimental refining of shale oil at the Boulder office indicates the extreme difficulty of securing white refined products from shale oil without excessive losses, although oils of a somewhat darker color can be obtained with much smaller losses, and these apparently do not change color with age. The work has also indicated the value of using dilute reagents in the refining and the probability commercial shale oil products will never be of as good color as present day petroleum products. Lubricating oils of satisfactory color and viscosity have been obtained, but only at the expense of an excessively higher refining loss.

Work is being continued at the Boulder office on elementary analyses of oil shales. In making combustion analyses of the shales and their products, the bituminous matter of the shale, when freed from the inorganic matter, takes up water very rapidly, and much care has to be exercised that the sample does not gain moisture during the weighing period or while being transferred from the balance to the combustion tube. Very good check determinations have been made, however, and it can now be considered that the combustion problem has been solved. Samples of representative shales from different parts of the country have been received in connection with this investigation.

MANGANESE AND IRON EXPERIMENTS

THE WORK of the Bureau of Mines in iron ores is being directed chiefly toward devising means for utilizing extensive deposits of low-grade ores which cannot be smelted profitably by present methods. The Minneapolis station continues in its co-operative investigations of the Lake Superior low-grade ores, and in milling tests, also including tests of ore from southern districts. More extensive work has been made possible through establishment of the Birmingham station, where a comprehensive survey of the iron and steel industry of that district has been begun. Investigation of the heat treatment of drill steels has been continued and the scope of the work greatly extended. The St. Louis station is co-operating with the Minneapolis station on the drill steels investigation.

Work has been started by the Bureau in the Tri-State district to find the most efficient change of gage to use between different lengths of steel. The experimental blast furnace at Minneapolis has been put in blast twelve times for the study of blast-furnace reactions as related to low-grade manganese ore now available in the United States. Experiments have also been conducted on

the flow of gases and the flow of stock in blast furnaces. Other subjects of investigation have included the following: volatilization of manganese in the blast furnace; history of blast furnace details; rate of reduction of iron oxide by carbon monoxide gas; the production of high-silicon pig; charcoal iron furnace practice.

POWER PERMIT ISSUED TO MINING COMPANY

THE Federal Power Commission has issued a preliminary permit to the Elmore Copper Company of Mountain Home, Idaho. The Company proposes to build a dam on the South Fork of Boise River, about 25 miles above the famous Arrowrock dam, where it is expected that about 3,000 horsepower can be developed. The power will be used at the company's mine and for general utility purposes in the vicinity. In view of the fact that water to be stored by the dam of the Elmore Copper Company will be later impounded at the Arrowrock reservoir for use during the irrigation season, circumstances might arise whereby the release of water for power may conflict with the use of the water for irrigation, and, therefore, the permit provides that if a license is issued, the right may be reserved to the United States to regulate the discharge of water from the company's reservoir to the extent necessary to protect irrigation rights.

INDUSTRIAL NOTES

THE Lincoln Steel and Forge Company of St. Louis, Missouri, have ready for distribution a very interesting pamphlet entitled "Why a Journal Box Mine Car Truck." The text is supplemented by charts showing the principle of this type of construction and goes very thoroughly into the Lincoln application of this principle. Any one interested in having a copy of this booklet may procure same upon writing direct to the above mentioned company.

The Hercules Powder Company of Wilmington, Delaware, presented a paper entitled "The Scientific Selection of Explosives for Coal Mining," at the Thirty-Fifth Annual Meeting of the Coal Mining Institute of America at Pittsburgh in December.

They have had extra copies of this paper printed, and any one who desires to possess a free copy may procure same by addressing Advertising Department of this company at the above address. The publication touches on the following subjects: Early Development of Explosives; Introduction of Permissible Explosives; Scientific Selection of Permissible Explosives; Effect of Permissible Explosives on the Size of Coal; and Factors Affecting Efficiency in the Use of Explosives.



LENGTHY SESSION OF CONGRESS IN PROSPECT

THE SECOND regular session of the Sixty-Seventh Congress convened on December 5. The volume of important matters before this Session augurs well for an interesting and strenuous session. The particular measure in which the mining industry is vitally interested is that of tariff, which bill was passed at the special session of Congress and is now before the Senate Finance Committee. It is expected that this bill will be reported by the Finance Committee and taken up for consideration by the Senate early in January. Final hearings of tariff revision began December 7, each schedule being limited to two days' hearing. It is anticipated that the Treasury Department will report favorably on the American Valuation plan.

The Senate Committee on Public Lands has reported the bill for agricultural entries on coal lands and the House Committee on Public Lands has reported the bill authorizing an extension of time under oil and gas permits. Senator Nicholson has introduced a bill appropriating \$25,000 for scientific study by the Bureau of Standards of values and relative values. Representative Johnson has introduced a bill suspending immigration entirely for three years. The Shortridge Bill, providing for the further relief of war minerals claimants, which passed in the last days of the special session, came in for some discussion on the floor of the House under the provision in the Deficiency Bill, which provides for a transference of a part of this fund for the payment of war claims.

On another page in this issue, we have shown the status of all bills of importance to the mining industry which were up for consideration at the special session, and their disposition.

Only a small number of mining bills have been introduced since December 5 and they are included in the following resume:

LABOR

H. R. 9292. Introduced by MR. GILLET; referred to the Committee on Education. (To provide for world-wide extension of education by the co-operation of national governments.) This bill appoints a com-

mission and authorizes the expenditure of \$10,000,000 to carry on the work for the removal of illiteracy from all mankind. The commission is to consist of a Commissioner of Education and four other persons to be appointed by the President.

ANTI-TRUST

S. 2783. Introduced by MR. POINDEXTER; referred to the Committee on Interstate Commerce. The bill provides that any person dealing in human food, fuel, or other necessities of life, who shall store, acquire, or hold, or who shall destroy or make away with any such article for the purpose of limiting the supply thereof whether temporarily or otherwise shall be deemed guilty of a felony and be punished by a fine of \$5,000 or by imprisonment for not more than two years. The bill provides that nothing in this section shall be construed to prohibit the holding or accumulating of any such article by any such person in a quantity not in excess of the reasonable requirements of his business for a reasonable time or in a quantity reasonably required to furnish said articles produced in surplus quantities seasonally throughout the period of scant or no production.

OIL

H. R. 8344. Introduced by MR. SINNOTT; referred to the committee on Public Lands.

Extension of time under oil and gas permits. The bill provides that the Secretary of the Interior may, if he shall find that any oil or gas permittee has been unable, with the exercise of diligence, to begin drilling operation or to drill wells of the depth and within the time prescribed by section 13 of the Act of Congress approved February 25, 1920, extend the time for beginning such drilling or completing it, to the amount specified in the Act for such time, not exceeding three years, and upon such conditions as he shall prescribe.

REVENUE

H. R. 9578. Introduced by MR. MORR; referred to the Committee on Ways and Means. (Amending 1921 Revenue Act). The bill provides that Title VIII, section

800 (b) of the Revenue Act be amended to read as follows: No tax shall be levied under this title in respect to (1) any admission all the proceeds of which inure (a) exclusively to the benefit of religious, educational, or charitable institutions, societies, or organizations, any post of the American Legion or the women's auxiliary units thereof, or any post of the Veterans of Foreign Wars of the United States or the women's auxiliary thereof, societies for the prevention of cruelty to children or animals, or societies or organizations conducted for the sole purpose of maintaining symphony orchestras and receiving substantial support from voluntary contributions, or of improving any city, town, village, or other municipality, or of maintaining a cooperative or community center moving-picture theater, if no part of the net earnings thereof inures to the benefit of any private stockholder or individual; or (b) exclusively to the benefit of persons in the military or naval forces of the United States; or (c) exclusively to the benefit of persons who have served in such forces and are in need; or (2) any admission to agricultural fairs if no part or members of the association conducting the same, or admissions to any exhibit, entertainment, or other pay feature conducted by such association as part of any such fair, if the proceeds therefrom are used exclusively for the improvement, maintenance, and operation of such agricultural fairs.

A similar bill has been introduced in the Senate by MR. WALSH under the number S. 2872.

MONETARY

S. J. Res. 139. Introduced by MR. NICHOLSON; referred to the Committee on Finance. The bill directs that the Bureau of Standards be directed to undertake the special study and investigation of the subject of value and relative value with a view to making an early report to Congress. In addition to suggesting a plan whereby value and relative value of all things shall be determined the Bureau shall recommend the manner in which it is believed the standard determined upon may be made of uniform application in

**STATUS OF IMPORTANT BILLS INTRODUCED IN THE SIXTY-SEVENTH CONGRESS
FROM MAY TO DECEMBER.**

COAL:

- S. 1806: Mr. Frelinghuysen (Seasonal Coal Rate) in Committee.
 S. 1807: Mr. Frelinghuysen (Federal Coal Commissioner on Senate Calendar).
 S. 2125: Mr. Bursam (Agricultural Entries on Lands) in Committee.
 S. 2003: Mr. Sutherland (Distribution Coal Cars) in Committee.
 S. J. Res. 73: Mr. Wadsworth (Government Fuel) in Committee.
 H.R. 7081: Mr. Linthicum (Seasonal Coal Rates) in Committee.
 H.R. 7106: Mr. Linthicum (Coal Stabilization) in Committee.
 H.R. 6563: Mr. MacGregor (Transportation of Coal) in Committee.
 H.R. 7948: Mr. Sutherland (Agricultural entries in Alaska Passed House on Senate Calendar).
 H.R. 7400: Mr. Luce (Quality of Domestic Anthracite) in Committee.
 H.R. 3720: Mr. Rhodes (Government purchase) in Committee.
 H.R. 2504: Mr. Butler (Fuel for Navy) in Committee.
 H.RES. 94: Mr. MacGregor (Anthracite Tax) in Committee.
 H.RES. 41: Mr. Lampert (Survey lands in U. S.) in Committee.
 S. 2558: Mr. Kenyon (Punishment for profiteering) in Committee.
 S. 2557: Mr. Kenyon (Federal Coal Act) in Committee.
 H.R. 8121: Mr. Herrick (Prohibition Issuance due bills) in Committee.

GOLD:

- H.R. 5025: Mr. McFadden (Excise Tax) in Committee.
 H.R. 4100: Mr. Raker (Calif. Debris Commission) in Committee.
 H.R. 5513: Mr. Husted (National Monetary Commission in Committee).
 H.R. 2182: Mr. MacGregor (Interchangeable value gold and silver throughout world) in Committee.

OIL SHALE:

- H.R. 2348: Mr. Taylor (Investigation to determine practicability) in Committee.

OIL:

- S.RES. 138: Mr. Harrel (Investigation monopoly) in Committee.
 S. 323: Mr. McKellar (Oil lands foreign governments) in Committee.
 H.R. 7950: Mr. Jacoway (Investigation drilling and production in Arkansas) in Committee.
 H.R. 8344: Mr. Sinnott (Extension of time on permits) on House Calendar.

H.R. 8730: Mr. Bland (Prohibiting discharge in navigable waters) Hearings held.

H.J. Res. 10: Mr. Callivan (Oil lands foreign governments) in Committee.

GOVERNMENT DEPARTMENTS:

- S. 1957: Mr. Nicholson (Mines) in Committee.
 S. 1896: Mr. McCormick (Public Works and Lands) in Committee.
 S. 2080: Mr. Calder (Waste Commission) in Committee.
 S. 551: Mr. Harrison (Western Branch Interior Dept.) in Committee.
 S. 230: Mr. Pittman (Division Mines & Geology) in Committee.
 S. 1607: Mr. Kenyon (Dept. Public Welfare) in Committee.
 H.R. 6379: Mr. McDuffie (Conservation) in Committee.

BLUE SKY:

- S. 1612: Mr. Capper (Federal Trade Commission) in Committee.
 H.R. 2352: Mr. Taylor of Colo. (Federal Stock Act) in Committee.
 H.R. 7215: Mr. Denison (Regulating sale of securities) Hearings held.
 H.R. 7868: Mr. Volsted (Prevention fraud of securities) in Committee.

ANNUAL ASSESSMENT:

- H.R. 4813: Mr. Hayden (Charging time for doing assessment work) Public Law No. 61.
 S. 1901: Mr. King (Suspending work until 1st of July, 1923) in Committee.

TARIFF:

- H.R. 7456: Mr. Fordney (Passed House July 21. Before Senate Finance Committee).

REVENUE:

- H.R. 8245: Messrs. Fordney & Penrose (To reduce and equalize taxation) Public Law No. 98.

WAR MINERALS:

- S. 843: Mr. Shortridge (Relief to claimants) Public Law No. 99.

INDIAN RESERVATION:

- S. 2312: Mr. Walsh (Leasing for mining purposes of unallotted lands Fort Peck Reservation (Passed by Senate pending on House calendar).

the several states, that all inequalities in valuations made for revenue may be reduced to the minimum or altogether eliminated. That in addition to stabilizing and standardizing in the Bureau of Standards the daily purchasing power of the value of the present gold dollar or medium of exchange equally with all other commodities to be definitely determined by the present statistical or improved scientific Federal Index numbers on the basis of the natural use of the Federal determined, daily, publicly declared average value of each commodity based on the real national supply and demand, exactly as per the daily rate of value of money exchange of pounds sterling by the Bank of England or by our rate of value of money exchange of the present gold dollar or medium of exchange by the American clearing house by regulation and control of the United States Congress. Thus the value of each commodity publicly daily declared at Washington for universal use. \$25,000 is appropriated to carry on the investigation.

IMMIGRATION

H. R. 9458. Introduced by MR. JOHNSON; referred to the Committee on Immigration and Naturalization. (Suspension of immi-

gration for three years). The bill specifically states that if any alien, or alien seaman, leaves the Canal Zone or any insular possession of the United States and attempts to enter any other place under the jurisdiction of this country nothing contained in this Act shall be construed as permitting him to enter under any other conditions than those applicable to all aliens, etc. Section 2 provides that from sixty days after the passage of this Act, and until the expiration of three years next after its passage, the immigration of aliens to this country is prohibited. During this time it will be unlawful for any alien to enter this country from any foreign port or place, or, having so entered, to remain within the United States. Section 2 does not apply to the following classes:

Admissible aliens lawfully resident in United States.

Government officials, their families, attendants, servants, and employees;

Travelers or temporary sojourners for pleasure or business, for a period not exceeding six months each;

Bona fide students who may enter this country solely for the purpose of study at educational institutions;

Ministers of any religious denomination.

PERSONALS

D. W. BRUNTON of Denver, Colorado, was in Washington on November 29. After an extended stay in New York and other eastern points he has returned to his home in Denver.

PHILIP WISEMAN, president of the United Eastern Gold Mining Company, has returned to Los Angeles after several weeks in Washington in the interest of tax matters.

CHARLES A. MITKE has returned to the United States after an extended trip in South America. Mr. Mitke stopped at Chicago enroute to his home in Bisbee, Arizona, to confer with Colonel Warren R. Roberts, chairman of the Coal Mining Branch of the Standardization Division of the American Mining Congress. Mr. Mitke is the chairman of the Metal Mining Branch of this Division.

J. E. SPURR, Editor of the Engineering and Mining Journal, was a caller at the offices of the Mining Congress on November 29.

YEAR'S EFFORT DIRECTED TOWARD ELIMINATION OF WASTE

INVESTIGATIONS conducted by the United States Bureau of Mines in the course of a special effort to aid mineral industries to re-establish themselves on a safe business basis to meet the renewed foreign competition and the changed conditions of supply and demand of the post-war period point the way to the possible saving of vast sums through the application of improved methods in the production of various mineral materials, according to H. Foster Bain, director, in his annual report just made to the Secretary of the Interior.

In an investigation of losses of crude oil through evaporation in storage and in transportation, it was found that in the few days in which crude oil is stored on the lease before being taken by the pipeline, the aggregate loss per year from evaporation amounts to about 122,000,000 gallons of gasoline in the Mid-Continent field alone. This has a value, at 22 cents per gallon, of \$26,840,000, and represents about 3 per cent of the total gasoline produced in the United States. The bureau found that a large percent of this loss could be prevented.

The Bureau of Mines has pointed out the considerable losses which have resulted from the failure of many refineries to recover gasoline from uncondensed still vapors. The value of fractionating towers at petroleum refineries, by means of which some companies have increased the yield of gasoline from crude oil by as much as 5 percent or 16 $\frac{2}{3}$ percent of the total gasoline yield, has been demonstrated, Dr. Bain states.

Large quantities of gas are now being wasted in the Osage Nation in Oklahoma because of low-pressure conditions, Dr. Bain reports, and the Bureau of Mines is investigating the feasibility of utilizing this waste gas by the use of low-pressure burners for oil-field boilers.

Under the arrangement by which supervision of the drilling and production of oil and gas on the public lands is vested in the Bureau of Mines, the bureau has supervision of about 100 producing oil properties which are producing at the rate of about 12,000,000 barrels of oil per annum. Even at the present reduced price of oil, the Government royalty from this should total perhaps \$2,000,000 per annum.

An investigation of scrap losses in aluminum-alloy foundry practice showed that the annual losses in the United States amount to \$1,200,000 and that universal adoption of methods recommended by the Bureau of Mines would probably result in a saving of about \$600,000 per annum. Melting losses in this industry, which are largely preventable, aggregate about \$3,000,000 yearly.

A new method was devised to simplify the collection of radium emanation from radium salts. Experiments are now in progress to perfect the process and to develop apparatus

that can be recommended for public use in laboratories and hospitals.

The bureau investigated the properties and possibilities of molybdenum, of which the United States possesses the largest known deposits.

"The cost of production of zinc, with the standard retort process, is now so high that it endangers the position of zinc as a cheap metal," Dr. Bain states. "Plans have been formulated for an investigation of proposed methods for the electrothermic metallurgy of zinc, with a view to increasing the recovery of metal and lowering production costs. The results of an investigation regarding the losses of fines in the tailings of zinc metals in the Wisconsin district indicate that the use of concentrating tables of a certain type will greatly increase recovery. It is estimated that this practice would have added about \$1,000,000 annually to the value of zinc output in this district had it been in operation in 1917. Important results in the utilization of the low-grade and complex ores of copper, lead, silver and zinc, which constitute a great problem in the mineral development of Utah, Colorado and other Rocky Mountain states, are promised by the utilization of the chloride volatilization process. The sulphur dioxide leaching of porphyry copper ores of Arizona holds the promise of important developments for the mineral industry of the Southwest."

The official summary of Dr. Bain's report continues:

"As about one-quarter of the bituminous coal produced in the United States is used in industrial power plants, the waste of unburned coal and coke in the ashes from boiler plants has been investigated by the bureau. It has been possible to recover the greater part of the unburned fuel by washing the ashes on a concentrating table. As the result of a study of coal washing problems in the State of Washington, one mine has built a table washing plant to treat a pile of refuse amounting to more than one million tons, estimated to contain 200,000 tons of recoverable coal of coking quality.

"The bureau conducted studies regarding the use of liquid oxygen as an explosive. In co-operation with the Department of Agriculture an investigation was made of the use of cellulose from corn cobs in the manufacture of dynamite. Investigations were conducted to determine the best and safest conditions for the industrial use of 13,000,000 pounds of picric acid, held as a surplus by the War Department. During the year the bureau called attention to the danger in using certain low-grade foreign detonators, which had been coming into the country in large numbers.

"A universal gas mask has been developed by the bureau for protecting the wearer against all poisonous gas not exceeding 2 or 3 percent concentration in air where a safety lamp will burn. A fireman's gas mask has also been developed. A small gas mask for

the use of train crews in railroad tunnels was devised. Investigation made in connection with the problem of ventilation of vehicular tunnels showed that from 20 to 30 percent of the heat of the gasoline used as fuel for automobile engines is lost in the form of unburned gases in the exhaust, due to improper carburetor setting.

"Investigations at the Ceramic Experiment Station at Columbus, Ohio, indicate that some American clays will yield products closely approaching the English china clay. At the same station it has been demonstrated that better graphite crucibles can be made with the use of domestic bonding clay than have hitherto been made with imported clays.

"During the year the bureau, in co-operation with three of the largest seaboard coal exchanges, developed scientific systems of classifying export coals into pools by systematic sampling and analysis to supersede the arbitrary classifications used in wartime. Further progress was made in the investigation for preparing and utilizing lignite, which constitutes the greater part of the nation's fuel resources.

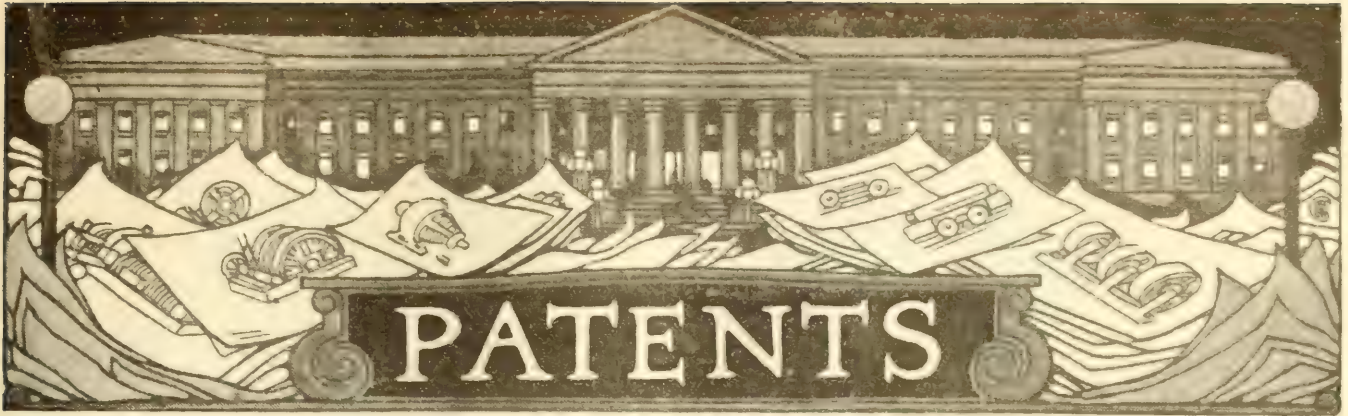
"The bureau completed work on preparation and analysis of special alloy steels for the Navy. A comprehensive report on recent developments in electric brass melting was finished.

"Methods for preparing caustic magnesia were investigated which determined that high-grade magnesia can be made from some varieties of magnesite hitherto believed to be unsuitable for this purpose. The bureau investigated dolomite as a substitute for the more costly magnesite in preparing refractories, and demonstrated that there can be obtained from Ohio dolomite a product superior in magnesia content to imported Canadian magnesite.

"More experimental work on mining explosives, with reference to increased safety and efficiency, was performed. Plans were initiated for an international conference on the standardization of mine-rescue apparatus. Methods for reducing losses of anthracite in mining operations were studied. Timbering methods for metal mines were investigated. A special study was made of the ventilation of metal mines and of the rock-dust problem in such mines.

"The bureau called attention to certain methods for the prevention of waste in the slate quarrying industry. Methods for reducing waste in the mining and preparation of talc were pointed out.

"In the course of the year the bureau trained 12,525 miners in rescue and first-aid methods, the largest number so trained in any fiscal year since the beginning of the training work."



LIMITED PERSONNEL OF PATENT OFFICE UNABLE TO FUNCTION PROPERLY

CONDUCTED BY JOHN BOYLE, JR.

THAT the patent office is in deplorable condition, is shown in the annual report of the Commissioner of Patents, according to the resume of the documents issued by the Department of the Interior. In July, 1919, the then commissioner testified before the House Committee on Patents that he had never seen the patent office in such poor condition, although he had been connected with it since 1891. The present commissioner in his annual reports shows that since that time until June 30, the end of the fiscal year 1921, the patent office suffered a loss of 163 examiners, scientifically trained men and members of the bar, who were replaced by inexperienced men "fresh from college, without any knowledge of patent law, or any legal training."

The official summary of the commissioner's report continues:

"During the time the Patent Office has been losing the 163 men aforesaid, the number of applications received in this office has increased by leaps and bounds. The number of applications for patent has increased 34 percent during the period under discussion, while the trade-mark applications increased 85 percent. In July, 1919, when Commissioner Newton testified, there were 18,000 patent applications awaiting action. There are now about 50,000 applications awaiting examination. It is further shown that a number of divisions are over eleven months behind in their work, and to illustrate the large turnover in the personnel, there is cited one of the chemical divisions where five out of the nine examiners have been appointed in the last few months. At the close of the fiscal year, one of those had been in the office only one week, another three weeks, another seven weeks, and another two months. One out of every four examiners has resigned in sixteen months and more than one-half have resigned in 32 months. Relief is, therefore, indicated as imperative.

"It is shown that there are many industries which can not enter into development work on account of the doubtful status of their applications for patents. A bill is now pending in the House, H. R. 7077, which is designed as an emergency measure to help relieve the situation.

"Reference is made to the entrance salaries of the assistant examiners, who are a highly educated and picked corps of scientific men,

who receive the same initial salary as clerks who perform routine duties in other branches of the government service. Note is made of the inadequacy of the salaries paid to these technical men as compared to their qualifications and the requirements of their positions, showing the necessity of correcting the disparity of conditions.

"The receipts of money for the fiscal year just closed increased from \$2,615,697.33 of the previous fiscal year to \$2,712,119.69, or almost \$100,000. A net surplus of \$284,342.93 was earned, and if the bonus be subtracted therefrom, the surplus amounted to \$71,745.73, making the total net surplus to date, that is, the excess of receipts over expenditures during the history of the Patent Office, \$8,376,769.29.

"Emphasis is laid upon the figures given and the conditions cited to show that the volume of business presented to the Patent Office is altogether too large for the present personnel to properly perform. Undoubtedly unless proper remedial measures are applied, the present deplorable condition will become intolerable."

During the fiscal year, 1921, there were 107,656 applications for patents and reissues and for registration of trademarks, labels and prints. Applications for patents of inventions total 84,248, as compared with 81,948 in 1920, 62,755 in 1919 and 62,399 in 1918.

Applications for patents, including reissues, designs, trademarks, labels and prints during 1921, total 107,656, as compared with 102,940 during 1920, 75,657 during 1919 and 73,307 in 1918.

The total patents granted and trademarks, labels and prints registered in 1921 was 53,817, as compared with 47,409 in 1920, 43,353 in 1919 and 46,078 in 1918.

It is in the column headed "Applications awaiting action" that the tremendous amount of work which is piled up in the patent department is shown. It is seen from this column that at the conclusion of the fiscal year there were 49,334 applications awaiting action as compared with 34,355 the year before, which number was itself the largest on record. At the end of 1917, 17,735 applications were

awaiting action and at the end of 1918 only 14,769.

1,395,996—*M. P. Holmes*, Claremont, N. H., Nov. 1, 1921, assigned to Sullivan Machinery Company.

MINING MACHINE having an improved feed controlling mechanism adapted for use in connection with a standard machine of the type utilizing a chain as a feeding member or of the special machine herein disclosed. It has heretofore been proposed to angle a short-wall mining machine relative to the face in such a manner as, for instance, to enable the same to pass directly from its sumping cut to its transverse cutting position by means of a double reeve connection extending from the rear end of the machine around a guide at the rib and back to the rear end of the machine.

FLOTATION PROCESS.

1,395,647—*N. D. Levin*, Columbus, Ohio, Nov. 1, 1921, assigned to Jeffrey Mfg. Company.

MINING MACHINE having vertical dimensions suitable to use in extremely low coal and adapted to be operable under the conditions obtaining with the relatively short working faces of the room and pillar system of mining, or in the limited space available between the roof supporting props and the working face in the long wall system. Comprises also feeding mechanism whereby the machine may be moved at a relatively low speed for cutting the coal and at a relatively high speed for handling about the room and mechanism for connecting the motor of the mining machine with the axles of a suitable truck to transport the machine about the mine.

1,395,716—*H. D. Costenbauder*, Aristes, Pa., Nov. 1, 1921.

JIG provided with means for periodically dumping or carrying off the slate, according to the weight thereof on a suitable trap, which is counterbalanced by means of a gravity member.

1,395,718—*P. H. Mack*, Bradford, Pa.,

Nov. 1, 1921, assigned to Oil Well Supply Company.

OIL WELL PACKER designed so that it may be lowered into position in the well and also set by means of drilling tools, for example, a drill bit, etc., attached to the rope or cable.

1,395,719—*P. H. Mack*, Bradford, Pa., Nov. 1, 1921, assigned to Oil Well Supply Company.

OIL WELL PACKER adapted to contain a suitable material, such as cement, for filling in the bottom of the hole or well.

1,395,720—*P. H. Mack*, Bradford, Pa., Nov. 1, 1921, assigned to Oil Well Supply Company.

WELL SEAL for use in comparatively shallow wells or in cases where it is unnecessary to employ an expensive packing structure.

1,395,791—*R. L. Bowman*, Knoxville, Tenn., Nov. 1, 1921.

CONDUCTOR FOR MINE EXPLOSIVES for the purpose of directing explosive charges back into the holes that are drilled prior to the blasting operation. It can also be used for placing either a loaded shell or a charge of explosive without the shell; also as an adjustable mandrel, whereby paper shells can be formed of the proper size for use and loaded separate from or in the conductor.

1,395,792—*R. L. Bowman*, Knoxville, Tenn., Nov. 1, 1921.

CONDUCTOR FOR MINE EXPLOSIVES in which a shell can be placed in any portion of the hole without danger of buckling and without danger of being misplaced or of losing any of the explosive. It is made up of separable sections whereby one part of the conductor can be opened easily to receive the charge and subsequently closed so as to hold the charge during its insertion in the hole. It can also be utilized as a spoon should it be desired to place an explosive in a hole without the use of a shell.

1,395,959—*J. Hermann*, Los Angeles, Calif., Nov. 1, 1921.

ORE CRUSHER having jaws movable relatively to one another and arranged respectively for oscillatory movement or for combined oscillatory and reciprocatory movement, a driving connection at one end of the jaws, a connecting loop at the opposite end, the connecting loop being pivotally mounted intermediate of its ends.

1,396,173—*J. T. Fenton*, Salt Lake City, Utah, Nov. 8, 1921.

TREATING OIL SHALE by injecting the same in a finely divided condition by superheated steam into an expansion chamber, subjecting the material to a further treatment with super-heated steam, continuously condensing the resulting vapors and continuously withdrawing the barren solids.

1,396,711—*G. Johnston*, Manchester, England, Nov. 8, 1921.

APPARATUS FOR PULVERIZING ORE by direct crushing with the substantial elimina-

tion of abrasive action either upon the ore crushed or upon the surfaces by which it is crushed. The rolls are driven at a comparatively high peripheral speed, and the particles of material to be crushed are fed to them at a velocity as nearly as may be equal to that peripheral speed, and in such wise that the particles are presented to the rolls successively and as nearly as may be separately—that is to say that each particle is presented with space between it and adjacent particles.

1,397,480—*G. W. Arnold*, Denver, Colorado, Nov. 15, 1921.

ORE SEPARATOR.

1,397,560—*C. H. Strange*, Minersville, Pa., Nov. 22, 1921.

MINING SELF LOADING AND UNLOADING SCRAPER relating to those scoop buckets which are specially adapted to be drawn by ropes into and out of thin vein cuttings in coal mines. The object of the invention is attained by hinging the back of the bucket at its lower edge and connecting the swinging edge of the back with both the tail rope that is used to draw the empty bucket into the chamber and with the head rope that is used to pull the loaded bucket out of the chamber, in such manner that the draft of the tail rope first opens down the back and then pulls the bucket along and causes the lowered back to dig into and scoop up the material blasted from the working face of the chamber, and the draft of the head rope first closes up the back and then pulls the bucket with its load from the chamber, this arrangement enabling the bucket to be drawn straight in and straight out without any turn, thereby insuring the return of the bucket with a full load in the shortest path and quickest possible time.

1,397,703—*H. R. Robbins*, Washington, D. C., Nov. 22, 1921.

FLOTATION PROCESS for separating sulphide of copper by adding a non-alkaline salt to the ore pulp without organic frothing agent.

1,397,735—*C. E. Holland*, Brooklyn, N. Y., Nov. 22, 1921.

RECOVERING COAL FINES from water or other liquid consisting in coagulating and precipitating the coal and organic matter in the liquid, and separating the coagulum and precipitate from the liquid.

1,397,749—*A. W. Tyler*, Los Angeles, California, Nov. 22, 1921.

DRY ORE CONCENTRATOR comprising a table having a perforated surface, means to blow air upwardly through the perforations and means to move a portion of the table in an elliptical path.

1,379,815—*R. Luckenbach*, Philadelphia, Pa., Nov. 22, 1921. Assigned to Luckenbach Processes Company.

APPARATUS FOR CONCENTRATING ORE by means of a combined flotation and amalgamation process in which the finer material particles in the form of oxides, carbonates, as well as sulfides of the minerals acted on, will be recovered by means of a flotation process, and the free metal in relatively large particles will be recovered by amalgamation with mercury.

1,398,051—*C. Thom, R. W. Diamond and S. G. Blaysock*, Trail, British Columbia, Nov. 22, 1921. Assigned to the Consolidated Mining and Smelting Company of Canada.

PROCESS FOR MAGNETIC SEPARATION OF ORES which consists in heating the ore without roasting to a temperature from 800 to 1200 degrees F. artificially cooling the ore under such conditions of heat and time ranging from 5 to 15 minutes as to retain the maximum susceptibility.

1,398,195—*W. K. Liggett*, Columbus, Ohio, Nov. 22, 1921. Assigned to the Jeffrey Manufacturing Company.

EXCAVATING MACHINE especially adapted to reclaim material from natural deposits or from storage piles and to load said material into convenient receptacles for transportation. The machine has an inclined conveyor adapted to loosen and gather relatively compact material from a pile at the level of the ground, and also adapted to clear itself when buried by the avalanching of the material of a storage pile. Means are provided to adjust the conveyor to various inclined operative positions, or to a horizontal position convenient for traveling under relatively low over-head obstructions.

1,398,394—*H. R. Robbins*, Manchester, New Hampshire, Nov. 29, 1921.

FLOTATION PROCESS comprising maintaining throughout the entire horizontal cross sectional area of a body of freely flowing ore pulp, a substantially uniform ascending column of minute gaseous bubbles, maintaining throughout said area a substantially homogeneous descending column of pulp, elevating pulp from the lower part of said body and discharging it through the horizontal area of the upper part of said body thereby causing homogeneous circulation of said pulp.

1,398,723—*J. W. Hornsey*, Summit, N. J., Nov. 29, 1921.

LEACHING ORES by subjecting the material successively to the leaching action of separate bodies of liquid, maintaining suspension of material in the separate bodies of liquid by vigorous agitation and permitting the material to settle after passing one zone of agitation and before entering the succeeding zone.

1,398,896—*G. Foster*, Bicknell, Indiana, Nov. 29, 1921.

MINE CAR STOP pivotally mounted adjacent a track rail and comprising a wheel engaging portion adapted to extend over the rail's head and a rail engaging portion adapted to extend under the rail's head.

1,398,909—*J. M. North*, Sparta, Illinois, Nov. 29, 1921.

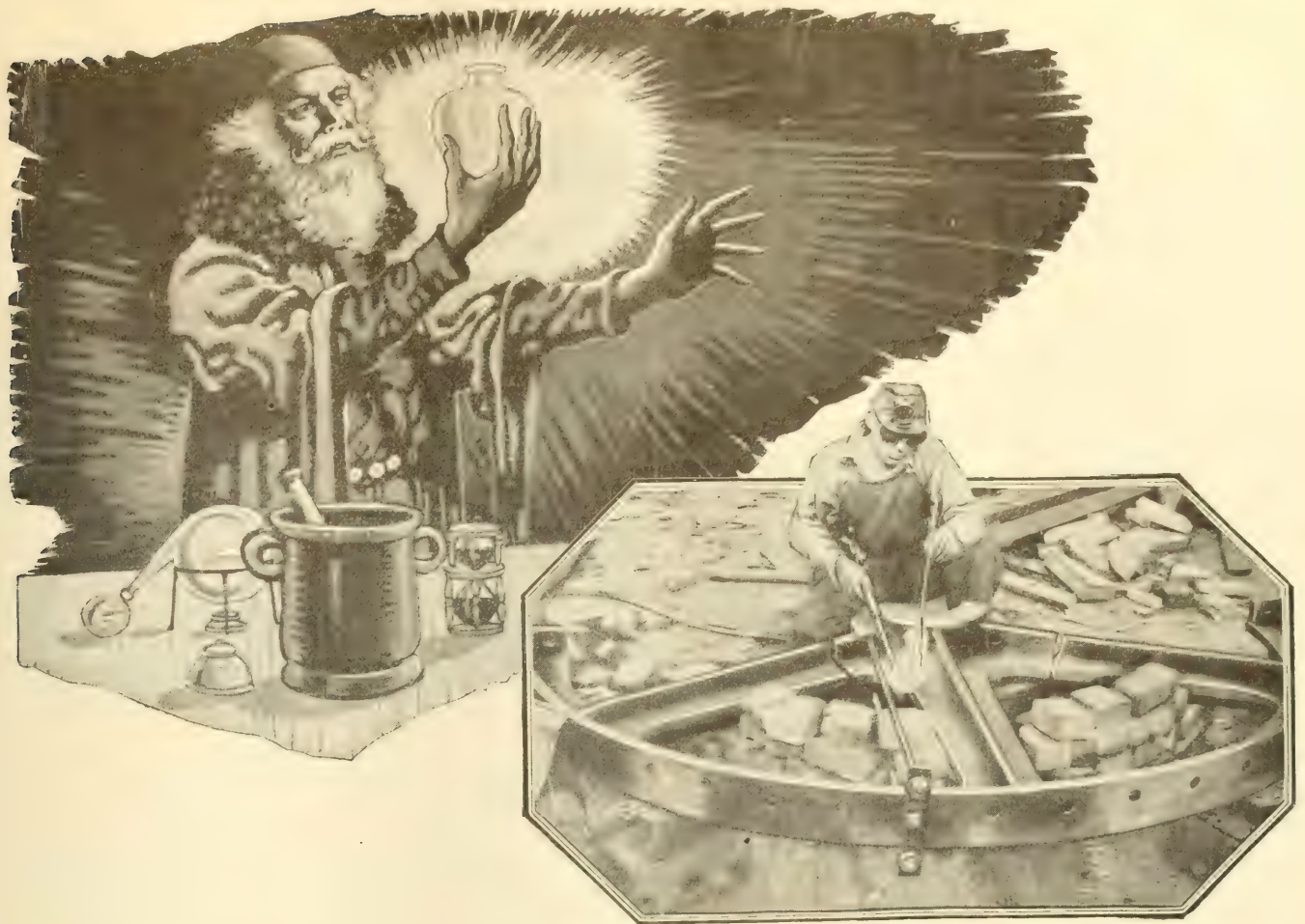
COAL MINE CURTAIN ROD for holding a curtain for use in fighting a coal mine fire and comprising means for connecting the curtain to the rods and for securely locking or holding the curtain rod in its operative position.

1,398,989—*E. W. Wilkinson*, San Francisco, California, Dec. 6, 1921. Assigned to Minerals Separation North American Corporation.

FLOTATION PROCESS consists in subjecting wood to a partially decomposing heat in the presence of air and flowing the mixed volatilized products into an ore pulp and additionally flowing a bubble forming gas.

1,399,380—*C. E. Davis*, Chicago, Ill., December 6, 1921. Assigned to Goodman Manufacturing Company.

MINING MACHINE comprising a novel construction and arrangement of the motor, a supporting frame mounted forwardly thereof, a cutter bar carried by the supporting frame and in longitudinal alinement therewith and the motor casing and draft devices associated with said machine and used for moving it bodily in a lateral direction as the cutting operation proceeds. In this arrangement the maximum head space is that required by the motor alone and the draft device is so arranged and connected to one side of the machine in substantially the same plane as the cutter bar so as to move the entire machine laterally during the cutting operation.



The age-old dream of the alchemist is realized because of Linde

THROUGH countless centuries man dreamed of transmuting the baser metals into gold. Patiently, laboriously, often consecrating their very lives to the work, the Alchemists of old toiled on toward their elusive goal.

As late as 1873 James Price, the last of the Alchemists, sought death by his own hand rather than acknowledge the failure of his experiments.

Linde Engineers of to-day have made this dream of by-gone ages come true.

By producing uniformly pure oxygen in industrial volume, they have made it possible for oxy-acetylene welders and cutters to reclaim thousands of tons of metal machinery annually—turning base metal into gold—a saving in money far in excess of any vision of wealth dreamed of by ancient philosophers.

And Linde does more than supply oxygen of absolutely uniform purity. Thanks to a chain of twenty-nine plants and forty-six warehouses it delivers Linde Oxygen when and where it is wanted in any volume.

LINDE AIR PRODUCTS COMPANY

Carbide and Carbon Building, 30 East 42nd Street, New York

Balfour Building, San Francisco

THE LARGEST PRODUCER OF OXYGEN IN THE WORLD

BUYER'S DIRECTORY

ACID, SULPHURIC

Irving Smelting & Refining Works, Irvington, N. J.

AERIAL TRAMWAYS

American Steel & Wire Co., Chicago and New York.

AIR COMPRESSORS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
General Electric Co., Schenectady, N. Y.
Worthington Pump & Machinery Corp., 115 Broadway, New York City.

AMALGAMATORS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Mine Equipment & Supply Co., Denver, Colo.

APPLIANCES ENGINEERING

Lunkenheimer Co., Cincinnati, Ohio.

ARMATURES

General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

ASBESTOS PRODUCTS

Mikesell Bros. Co., 156 North La Salle St., Chicago, Ill.

ASSAYERS

Walter E. Burlingame, 1736 Lawrence St., Denver, Colo.
Indiana Laboratories Co., Hammond, Ind.
Ledoux & Co., Inc., 99 John St., New York.
Pennsylvania Smelting Co., Pittsburgh, Pa.
Union Assay Office, Inc., Box 1446, Salt Lake City, Utah.

AUTOMATIC CAR CAGERS

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

AUTOMATIC COAL SKIP

Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

AUTOMATIC (Mine Doors, Truck and Electric Switches)

American Mine Door Co., Canton, Ohio.

BALL MILLS

Mine Equipment & Supply Co., Denver, Colo.
Worthington Pump & Machinery Corp., 115 Broadway, New York City.

BATTERY-CHARGING EQUIPMENT

General Electric Co., Schenectady, N. Y.

BELTING (Conveyor, Elevator, Transmission)

Jeffery Mfg. Co., 958 N. Fourth Avenue, Columbus, Ohio.

BELTING, SILENT CHAIN

Morse Chain Co., Ithaca, N. Y.

BINS (Coke and Coal)

Jeffery Mfg. Co., Columbus, Ohio.

BIT SHARPENERS

Denver Rock Drill Mfg. Co., Denver, Colo.

BLASTING SUPPLIES

Atlas Powder Company, Wilmington, Del.
du Pont Powder Co., The E. I., Wilmington, Del.
Giant Powder Co., Wilmington, Del.
Hercules Powder Co., Wilmington, Del.
National Fuse & Powder Co., Denver, Colo.

BLOWERS

General Electric Co., Schenectady, N. Y.

BOILER MOUNTINGS

Lunkenheimer Co., Cincinnati, Ohio.

BOILERS

Allis-Chalmers Mfg. Co., Milwaukee, Wis. (feed pump).
Mine Equipment & Supply Co., Denver, Colo.

BOXES, JOURNAL

J. R. Fleming & Son Co., Inc., Scranton, Penna.

BRATTICE CLOTH

Mikesell Brothers Co., 156 N. La Salle Street, Chicago, Ill.

BREAKERS (Construction and Machinery)

Jeffery Mfg. Co., Columbus, Ohio.
Vulcan Iron Works, Wilkes-Barre, Pa.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.
Wilmot Engineering Co., Hazleton, Pa.

BRIQUETTING MACH.

Jeffery Mfg. Co., Columbus, Ohio.

BUCKETS (Elevator)

Hendrick Manufacturing Company, Carbondale, Penna.
Jeffery Mfg. Co., Columbus, Ohio.
Stephens-Adamson Mfg. Co., Aurora, Ill.

CABLES (Connectors and Guides)

American Mine Door Co., Canton, Ohio.

CABLEWAYS

Jeffery Mfg. Co., Columbus, Ohio.
Lidgerwood Mfg. Co., 96 Liberty St., New York City.

CAGES

Car-Dumper & Equipment Co., Chicago, Ill.
Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.
Holmes & Bros., Robert, Inc., Danville, Ill.
Lidgerwood Mfg. Co., 96 Liberty St., New York City.

CAGE (Safety Appliances)

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

CAR CONTROL AND CAGE EQUIPMENT

Car-Dumper & Equipment Co., Chicago, Ill.

CAR DUMPS

Car-Dumper & Equipment Co., Chicago, Ill.

CAR AND CAR WHEELS

Hockensmith Mine Car Co., Penn Station, Pa.
United Iron Works Co., Kansas City, Mo.
Watt Mining Car Wheel Co., Barnesville, Ohio.

CAR-HAULS

Car-Dumper & Equipment Co., Chicago, Ill.

CASTINGS

Jeffery Mfg. Co., 958 N. Fourth Street, Columbus, Ohio.
The Lunkenheimer Co., Cincinnati, Ohio.
Mine Equipment & Supply Co., Denver, Colo.

CHAINS

Jeffery Mfg. Co., Columbus, Ohio.
Morse Chain Co., Ithaca, N. Y.
Stephens-Adamson Mfg. Co., Aurora, Ill.

CHEMICALS

The Barrett Company, 90 West St., New York City.
Roessler & Hasslacher Chemical Co., 709-717 Sixth Avenue, New York.

CHEMISTS

Walter E. Burlingame, 1736 Lawrence St., Denver, Colo.
Hunt, Robt., & Co., Insurance Exchange, Chicago, Ill.
Indiana Laboratories Co., Hammond, Ind.
Ledoux & Co., A. R., Inc., 99 John St., New York City.
Union Assay Office, Inc., Box 1446, Salt Lake City, Utah.

CIRCUIT BREAKERS

Automatic Reclosing Circuit Breaker Co., The, Columbus, O.
General Electric Co., Schenectady, N. Y.

CLAMPS (Trolley)

Ohio Brass Co., Mansfield, Ohio.

CLUTCHES

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

COAL COMPANIES

Clinchfield Coal Corp., Dante, Va.
Lehigh Coal & Navigation Co., Philadelphia, Pa.
Stonegal Coal & Coke Co., Philadelphia, Pa.
Thorne, Neale & Co., Philadelphia, Pa.
Wholesale Coal Co., Pittsburgh, Pa.

COAL CRUSHERS

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.
Jeffery Mfg. Co., Columbus, O.
Stephens-Adamson Mfg. Co., Aurora, Ill.

COAL CUTTERS

Goodman Mfg. Co., Chicago, Ill.
Jeffery Mfg. Co., Columbus, Ohio.

COAL DRYING PLANTS

Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

COAL HANDLING MACHINERY

Jeffery Mfg. Co., Columbus, Ohio.
Lidgerwood Mfg. Co., 96 Liberty St., New York City.
Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.
Stephens-Adamson Mfg. Co., Aurora, Ill.
Watt Mining Car Wheel Co., Barnesville, Ohio.

COAL LOADING MACHINES

Myers-Whaley Company, Knoxville, Tenn.

COAL MINING MACHINERY

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Goodman Mfg. Co., Chicago, Ill.
Jeffery Mfg. Co., Columbus, Ohio.
Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

COAL MINE POWER PLANTS

Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

COAL MINING PLANTS

Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

COAL WASHING MACHINERY

Stephens-Adamson Mfg. Co., Aurora, Ill.

COAL WASHING PLANTS

Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

COCKS (Locomotive, Cylinder and Gauge)

The Lunkenheimer Co., Cincinnati, Ohio.
Nicholson, W. H., & Co., Wilkes-Barre, Pa.

COILS (Choke)

General Electric Co., Schenectady, N. Y.

COMPRESSORS, AIR

General Electric Co., Schenectady, N. Y.

CONCENTRATORS (Magnetic)

Worthington Pump & Machinery Corp., 115 Broadway, New York City.

CONCENTRATORS (Table)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Mine Equipment & Supply Co., Denver, Colo.
Worthington Pump & Machinery Corp., 115 Broadway, New York City.

CONCRETE REINFORCEMENT

American Steel & Wire Co., Chicago and New York.

CONDENSERS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.
Worthington Pump & Machinery Corp., 115 Broadway, New York City.

CONSULTING ENGINEERS

Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.
Shourds-Stoner Co., Inc., Terre Haute, Ind.

CONTRACTORS

Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

CONTROLLERS

General Electric Co., Schenectady, N. Y.
Goodman Manufacturing Co., Halsted St. and 48th Place, Chicago, Ill.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

CONVEYORS, BELT

Jeffery Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Stephens-Adamson Mfg. Co., Aurora, Ill.

CONVEYORS, CHAIN FLIGHT

Jeffery Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Wilmot Engineering Co., Hazleton, Pa.
Stephens-Adamson Mfg. Co., Aurora, Ill.

CONVEYORS, COAL

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Lidgerwood Mfg. Co., 96 Liberty St., New York City.
Stephens-Adamson Mfg. Co., Aurora, Ill.

CONVEYORS AND ELEVATORS

Jeffrey Mfg. Co., Columbus, Ohio.
Stephens-Adamson Mfg. Co., Aurora, Ill.

CONVEYORS, PAN OR APRON

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Stephens-Adamson Mfg. Co., Aurora, Ill.

CONVEYORS, PANS AND FLIGHTS

Hendrick Manufacturing Company, Carbondale, Pa.

CONVEYORS, SCREW

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Stephens-Adamson Mfg. Co., Aurora, Ill.

COPPER ELECTROLYTIC

United Metals Selling Co., 42 Broadway, New York City.

COPPER WIRE

Anaconda Copper Mining Co., 111 W. Washington St., Chicago, Ill.

CORE DRILLING

H. R. Ameling Prospecting Co., St. Louis, Mo.
Hoffman Bros., Punxsutawney, Pa.

COUPLINGS

Nicholson, W. H., & Co., Wilkes-Barre, Pa.

CRUSHERS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Mine Equipment & Supply Co., Denver, Colo.
Stephens-Adamson Mfg. Co., Aurora, Ill.
United Iron Works Co., Kansas City, Mo.
Worthington Pump & Machinery Corp., 115 Broadway, New York City.

CRUSHERS, COAL

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Stephens-Adamson Mfg. Co., Aurora, Ill.
United Iron Works Co., Kansas City, Mo.

CRUSHING PLANTS, COKE

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

CYANIDE

American Cyanamid Co., New York, N. Y.
Roessler and Hasslacher Chemical Company, 709 Sixth Avenue, New York City.

DERRICKS AND DERRICK FITTINGS

James H. Channon Mfg. Co., 227 W. Erie St., Chicago, Ill.

DESIGNERS OF PLANTS

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Mine Equipment & Supply Co., Denver, Colo.
Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

DIAMOND CORE DRILL CONTRACTING

Hoffman Bros., Punxsutawney, Pa.

DOORS, AUTOMATIC MINE

American Mine Door Co., Canton, Ohio

DRAG LINES

Denver Rock Drill Mfg. Co., Denver, Colo.

DREDGES, GOLD AND TIN

New York Engineering Co., 2 Rector St., New York City.

DRIFTERS, DRILL

Denver Rock Drill Mfg. Co., Denver, Colo.
Ingersoll-Rand Co., New York City.

DRILLS (Blast Hole)

Denver Rock Drill Mfg. Co., Denver, Colo.
Ingersoll-Rand Co., New York City.

DRILLS, CORE

Hoffman Bros., Punxsutawney, Pa.
Ingersoll-Rand Co., New York City.

DRILLS, ELECTRIC

General Electric Co., Schenectady, N. Y.
Ingersoll-Rand Co., New York City.
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Union Electric Co., Pittsburgh, Pa.

DRILLS, HAMMER

Denver Rock Drill Mfg. Co., Denver, Colo.
Ingersoll-Rand Co., New York City.

DRILLS (Hand Operated Coal)

Ohio Brass Co., Mansfield, Ohio.
Ingersoll-Rand Co., New York City.

DRILLS, PNEUMATIC

Denver Rock Drill Mfg. Co., Denver, Colo.
Ingersoll-Rand Co., New York City.

DRILLS, PROSPECTING

Hoffman Bros., Punxsutawney, Pa.
New York Engineering Co., 2 Rector St., New York City.

DRILLS, ROCK

Denver Rock Drill Mfg. Co., Denver, Colo.
General Electric Co., Schenectady, N. Y.
Ingersoll-Rand Co., New York City.
Union Electric Co., Pittsburgh, Pa.

DRILL STEEL SHARPENERS

Denver Rock Drill Mfg. Co., Denver, Colo.

DRIVES, SILENT CHAIN

Morse Chain Co., Ithaca, N. Y.

DRUMS (Hoisting, Haulage)

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

DRYERS, ORE

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

DUMPERS, ROTARY

Car-Dumper & Equipment Co., Chicago, Ill.

DUMP CARS

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

DYNAMITE

Atlas Powder Co., Wilmington, Del.
du Pont Powder Co., The E. I. Wilmington, Del.
Giant Powder Co., Wilmington, Del.
Hercules Powder Co., Wilmington, Del.
National Fuse & Powder Co., Denver, Colo.

DYNAMOS

General Electric Co., Schenectady, N. Y.
Goodman Mfg. Co., Forty-eighth Place and Halsted St., Chicago, Ill.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

EJECTORS

The Lunkenheimer Co., Cincinnati, Ohio.

ELECTRICAL APPARATUS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

ELECTRIC HOISTING MACHINERY

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

ELECTRIC LOCOMOTIVES

General Electric Co., Schenectady, N. Y.
Goodman Mfg. Co., Forty-eighth Place and Halsted St., Chicago, Ill.
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Ohio Brass Co., Mansfield, Ohio.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

ELECTRIC MINE SUPPLIES

General Electric Co., Schenectady, N. Y.
Ohio Brass Co., Mansfield, Ohio.

ELECTRICAL SUPPLIES

General Electric Co., Schenectady, N. Y.
Union Electric Co., Pittsburgh, Pa.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

ELEVATORS

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Stephens-Adamson Mfg. Co., Aurora, Ill.

ELEVATORS, BUCKET

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Stephens-Adamson Mfg. Co., Aurora, Ill.

ELEVATOR MACHINERY

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Stephens-Adamson Mfg. Co., Aurora, Ill.

ELIMINATORS

Nicholson, W. H. & Co., Wilkes-Barre, Pa.

ENGINE TRIMMINGS

The Lunkenheimer Co., Cincinnati, Ohio.

ENGINEERING APPLIANCES

The Lunkenheimer Co., Cincinnati, Ohio.

ENGINES

Lidgerwood Mfg. Co., 96 Liberty St., New York City.
Worthington Pump & Machinery Corp., 115 Broadway, New York City.

ENGINES, GAS AND GASOLINE

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Mine Equipment & Supply Co., Denver, Colo.
Worthington Pump & Machinery Corp., 115 Broadway, New York City.

ENGINES (Hoisting and Hauling)

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

ENGINES, OIL

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Mine Equipment & Supply Co., Denver, Colo.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.
Worthington Pump & Machinery Corp., 115 Broadway, New York City.

ENGINES, STEAM

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

ENGINEERS

H. R. Ameling Prospecting Co., St. Louis, Mo.
Hunt, Robert & Co., Insurance Exchange, Chicago, Ill.
Indiana Laboratories Co., Hammond, Ind.
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

EXPLOSIVES

Atlas Powder Co., Wilmington, Del.
Du Pont Powder Co., Wilmington, Del.
Giant Powder Co., Wilmington, Del.
Hercules Powder Co., Wilmington, Del.
National Fuse & Powder Co., Denver, Colo.

FANS, VENTILATING

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.
General Electric Co., Schenectady, N. Y.
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Vulcan Iron Works, Wilkes-Barre, Pa.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

FEEDERS, ORE

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Stephens-Adamson Mfg. Co., Aurora, Ill.

FILTER CLOTH METALLIC

United Filters Corp., 65 Broadway, New York City.

FILTERS, PRESSURE AND CONTINUOUS

United Filters Corp., 65 Broadway, New York City.

FILTERS (Water)

Wm. B. Scaife & Sons Co., Oakmont, Pa.

FLOTATION OILS

The Barrett Co., 17 Battery Place, New York City.
General Naval Stores Co., 90 West St., New York City.

FLOW METERS

General Electric Co., Schenectady, N. Y.

FORGINGS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
James H. Channon Mfg. Co., 227 W. Erie St., Chicago, Ill.
Mine Equipment & Supply Co., Denver, Colo.

FORGED STEEL BALLS

Mine Equipment & Supply Co., Denver, Colo.

FROGS AND SWITCHES

Central Frog & Switch Co., Cincinnati, Ohio.

FURNACES, MECHANICAL ROASTING

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

GASKETS

Mikesell Bros. Co., 156 N. La Salle St., Chicago, Ill.

GEARS

General Electric Co., Schenectady, N. Y.
Jeffrey Mfg. Co., Columbus, Ohio.
Stephens-Adamson Mfg. Co., Aurora, Ill.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

GEARS, SILENT CHAIN

Morse Chain Co., Ithaca, N. Y.

GENERAL SHEET AND LIGHT STRUCTURAL WORK

Hendrick Mfg. Co., Carbondale, Pa.

GENERATORS AND GENERATING SETS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

GRINDING BALLS

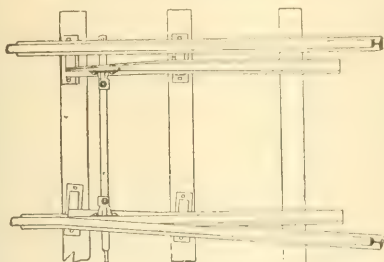
Mine Equipment & Supply Co., Denver, Colo.

HANGERS (Insulated Trolley)

Ohio Brass Co., Mansfield, Ohio.

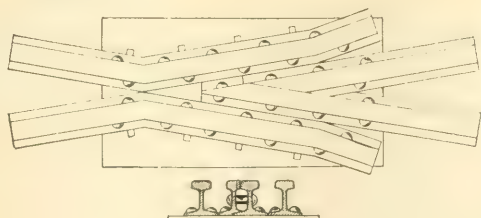
CENTRAL MINE TRACK EQUIPMENT

Instead of using 18 to 30-inch latches hammered out of square iron, in your blacksmith shop, use these long latches, cut from standard section rail and carefully planed to the correct shape. Keep your cars on the track—not in the ditch.



Split Switch

Riveted
Plate
Frog



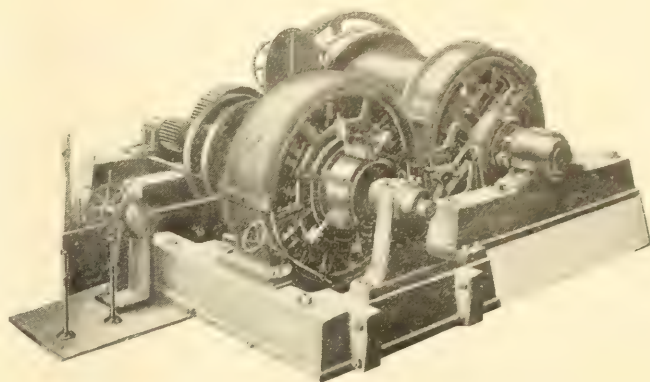
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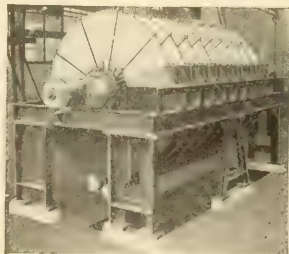
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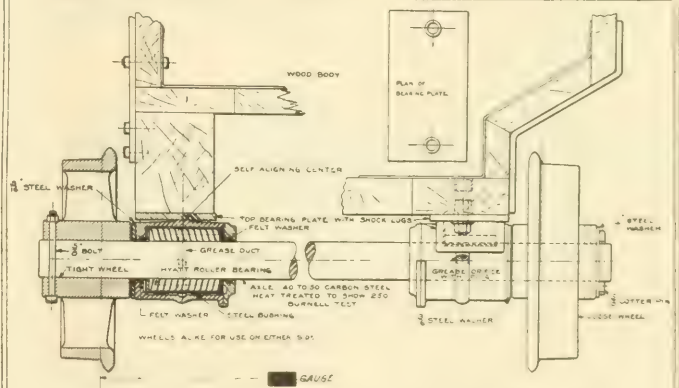
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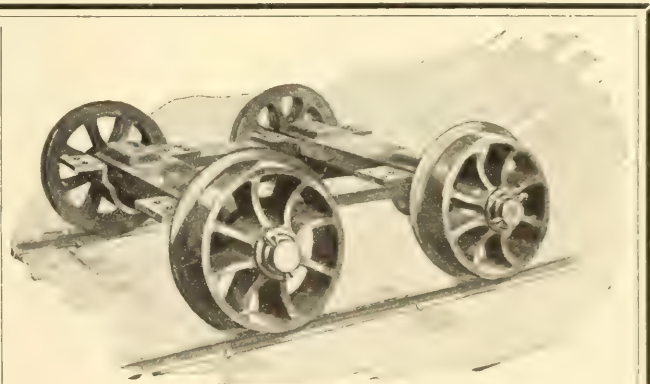
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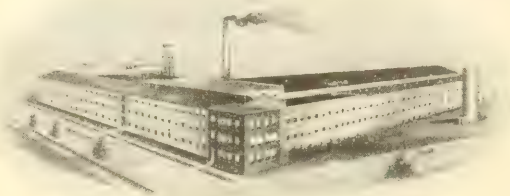
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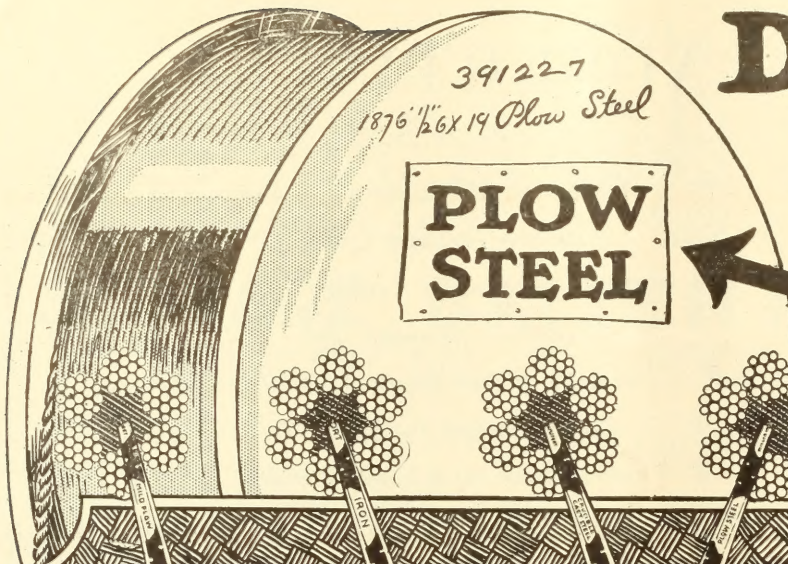
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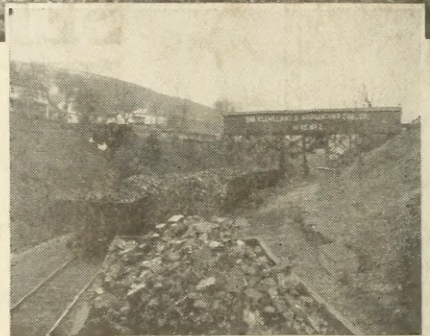
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A Close-up of Joe Voithover (on the right) and Mike Klimer (helper) on the left. They're proud of their 35-B and its record.

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